

Reading 7.4

Troyer, W 1992, 'Greening your Department', Chapter 2,
*The Green Partnership Guide Canadian Pacific Hotels and
Resorts*.

COMMONWEALTH OF AUSTRALIA

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GREENING YOUR DEPARTMENT

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INTRODUCTION

No department of *any* hotel can act in isolation. Just as each and every department has a vital role to play in guest comfort and satisfaction, it also has a vital role to play in environmental protection.

In the same way, every CPH&R green partner affects the role and function of every other green partner. Three quick and simple examples:

- 1) Kitchen staff will inevitably waste energy and add to needless pollution unless:
 - Repairs and Renovations paints the kitchens in light colours;
 - Purchasing provides green products;
 - and Plant Management ensures that vital equipment is in good repair, with thermostats correctly set.
- 2) Waste Disposal staff can't reduce garbage volume unless:
 - Purchasing reduces or eliminates unnecessary packaging;
 - Kitchen, Grounds and Golf Course staff compost scraps and yard waste;
 - and Kitchen, Housekeeping and Plant Management all cooperate in recycling.
- 3) Housekeeping can't reduce pollution and garbage unless:
 - Purchasing provides environmentally-friendly products;
 - and Plant Management institutes recycling programmes.

Just as your responsibilities as CPH&R green partners overlap, you'll find overlaps in this manual. Start by reading those parts which apply directly to *your* job. Then read the complete manual, and see how your work overlaps effectively with that of your colleagues. You need their help; they need your help; and Mother Nature needs all our help.



DEPARTMENT GUIDELINES



I. WASTE DISPOSAL

The goal of Waste Disposal is to dramatically reduce the waste we send for incineration or landfill. This is not possible without two major programmes:

ONE: Remove Unnecessary Potential Waste from the Waste Stream

Redirecting the flow-through of materials which are not to be considered anymore as "garbage" will result in huge reductions in our overall volume of "waste". Items to be taken out of the waste stream include:

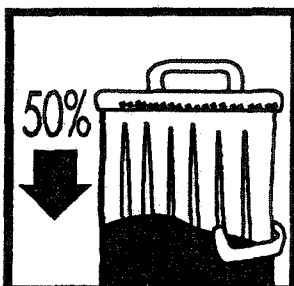
- **Needless packaging** which should be rejected by every department in the hotel.
- **Everything that can be recycled:** including glass, tins, newspapers, cardboard, office and fine papers, many plastics, tins, batteries, motor oils, coat hangers, printer cartridges and ribbons, fine papers and telephone books.

TWO: Remove Everything That Can Be Composted

This includes:

- **All organic kitchen wastes:** coffee grounds, tea leaves, egg shells, fruit rinds, salad leftovers, vegetable trimmings (but no grease, meats or fish).
- **Lawn and garden waste:** grass cuttings, pruning from shrubs and hedges, dead flowers and plants, leaves (but no garden waste that's been sprayed with toxic pesticides, herbicides or fungicides. Those poisons can kill the bacteria which make composting possible; and because many of them persist for months or years, they contaminate the compost for future use.)

WASTE DISPOSAL 50% BY 1993



OUR TARGET GOAL:

Reduce the overall volume of waste going to landfill by half – by the end of 1992.

We should – and can – do better than that!



II. LAUNDRY

Your in-house laundry is one of the most energy-intensive areas of your hotel's operation. Its use of energy per square foot may even surpass the kitchen.

HEAT LOST = ENERGY LOST = MONEY LOST!



If you could see an infra-red picture of your laundry area, you'd probably be astonished at the constant heat and energy losses.

Dirty machinery, motors and fans operate inefficiently, and use needless energy. Improperly fitting gaskets, poor insulation and open floor drains can all add heat and humidity to the room, increasing the air conditioning load (and cost). A proper maintenance program will eliminate these problems and improve working conditions.

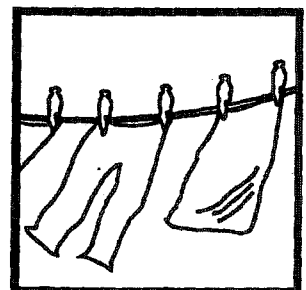
It may make sense to re-schedule your hours of operation. From 10 p.m. to 6 a.m. is the low demand time for energy. Consider using this time period, to help avoid high peak electrical charges (You may be surprised at just how many employees may prefer to work at night.)

Staggered employee lunch and break periods also help keep machinery in continuous operation. Heat is wasted when machines are idle.

A considerable amount of usable steam is left in the boiler and pipes at the end of the day. Try this: shut the boiler down five minutes earlier than usual and observe the results. Then extend the time a few minutes each day until you reach an optimum early shut-down time that doesn't affect production or quality. Unused steam is wasted money.

Don't overlook steam leaks, either. If steam, rather than liquid condensate, is passing through a trap, the trap is defective and should be repaired or replaced right away. For example: A steam trap with a 3/8" orifice on a 100 psi line can waste up to 470,000 pounds of steam a month if it leaks. At a cost of \$5 per thousand pounds, the waste would be \$2,350 per month.

LAUNDRY
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'Green' Laundry General Checklist:

- **Stop** using any phosphates and harmful chemicals.
- **Set** hot water thermostats at the minimum level needed.
- **Use** cold water wash whenever possible.
- **Operate** equipment during off-peak electrical load hours.
- **Have** all equipment cleaned and serviced regularly, and maintained at 100% efficiency.
- **Save** and re-use clothes hangers.
- **Recycle** all cartons, bottles and jugs.
- **Install** "station" lighting, and keep light fixtures clean.
- **Paint** walls and ceilings in light, reflective colours.
- **Turn** off all lights and equipment when not in use. (Remember: If it's not in use, turn it off!)
- **Don't** turn on washers and dryers till they're full.
- **Don't** use chemical fabric softeners; instead, add a bit of vinegar to the rinse water.
- **Don't** use commercial, chemical-impregnated anti-cling products; a wet towel in the dryer works the same magic!
- **Send** "perc" cartridges for recycling if your laundry does dry cleaning.
- **Don't** use aerosol products. If you use starch, put it in pump dispensers.
- **Make** your own non-chemical starch for the laundry. Simply add 1 tablespoon of cornstarch to 8 oz. water and mix: much cheaper, and just as effective.

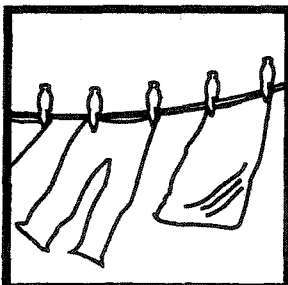


Laundry Management Checklist:

- **Clean** walls, ceilings and light fixtures regularly, to reflect maximum light.
- **In** cooperation with your detergent suppliers, experiment with non-phosphate cold water washes.
- **Heat** water only to the temperature absolutely needed.
- **Install** separate light switches to turn off lights in low-use or naturally lighted areas, or connect them to timers.
- **Colour-code** individual switches in multiple-switch installations to identify which lights they control, and which switches to leave on (or turn off when not needed).
- **Do** laundry during non-peak times, when less equipment and energy are being used in other areas.
- **Institute** regular employee training on proper equipment use.
- **Install** fluorescent lights; they use about 1/3rd the electrical energy used by incandescents.
- **Repaint** with light colours only, to reflect light.
- **Shut** down boilers as soon before the shift end as is practical.



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- **Place** light sources as close as practical to the work area.
- **Install** timers on all equipment.
- **Install** insulated covers on dryers to reduce heat loss.
- **Ensure** that your preventive maintenance program is in full operation.

Laundry Operating Procedures Checklist:

- **Operate** machines with full loads only; they use the same energy whether full or not.
- **Sort** dirty clothes according to type and soilage, and wash with minimum cycle necessary for each type.
 - ➔ Sort clothes to be dried by type; dry with the lowest temperature and shortest adequate time cycle.
- **Use** the extractor cycle correctly; it's more energy-efficient than heat drying.
- **Schedule** dryers to operate continuously, so as not to waste residual heat built up during the previous load.
- **Clean** lint traps at least twice a day.
- **Check** lint build-up in other parts of dryers daily.
- **Run** ironers as little as possible; minimize warm-up time; heat only to minimum temperature needed; turn off when not in use.
- **Use** timers to avoid running equipment longer than necessary.
- **Immediately** report any malfunctioning equipment, water and steam leaks, or clogged drains.
 - **Never** leave faucets running.
 - **Turn** off lights, heating and cooling systems at the end of the work day.
- **Cool** laundry room with normal outside air when practical.
- **Turn** off all lights in areas not being used.



"Full loads only!"
- says former rocket scientist

Laundry Maintenance Procedure Checklist:

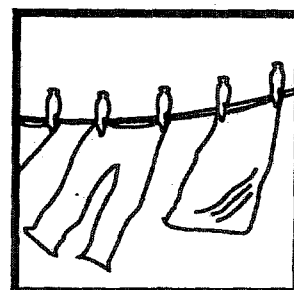
A. Washers:

- **Make** sure control valves are working properly, and don't leak.
- **Check** belt-driven models for tightness of belt and alignment of pulleys.
- **Lubricate** motor as needed; clean off lint, dust and dirt.
- **Have** service rep clean and adjust gas model burners.
- **Ensure** washer timers are all working correctly.

B. Dryers:

- **Check** heat recovery equipment; clean waste-heat exchangers, and periodically check efficiency.
- **Always** check front-to-rear level of tumbler baskets or cylinders. An out-of-level basket axis can result in uneven loading of materials and substantial waste of heat energy.

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Lighting Checklist:

- **Check** cleanliness of fixtures, bulbs, ceilings, walls and windows; dirt can reduce lighting efficiency by as much as 50%. Test effectiveness of cleaning by measuring a fixture's footcandles with a light meter before and after cleaning.
- **Have** the workers in each area help decide on proper light levels; Individuals' light requirements vary according to age and physical condition; and productivity suffers if light is not adequate.
- **Move** switches, if necessary; so they're convenient and visible; employees are more apt to help conserve energy if it's easy.
- **Install** additional switches in areas that don't always require full lighting, so that only lights which are needed are turned on.
- **Use** light switch stickers to remind staff to 'switch-off' when leaving a room.
- **Replace** resistance dimmer switches with solid state dimmers.
- **Rearrange** work stations where practical to share lighting.
- **Consider** 'task lighting' for employee work stations.
- **Ensure** that the maintenance department does the following:
 - ◆ check automatic lighting controls daily;
 - ◆ clean windows/skylights every 3 months or as required, (especially if you've got seagulls around);
 - ◆ clean lamps, fixtures, every 6 months or as required;
 - ◆ clean ceilings and walls as required.
 - ◆ Replace incandescent lighting with fluorescents wherever feasible.
- **Replace** existing fluorescent lighting with 'watt-saver' or 'watt-miser' tubes, which use less energy with only a minor reduction in light output (e.g. replace 40W tubes with 35W; 75W tubes with 60W).
- **Use** natural light when possible, except when it interferes with temperature controls.
- **Use** the minimum amount of light needed in your work area, and turn lights off when leaving the room for 15 minutes or more.

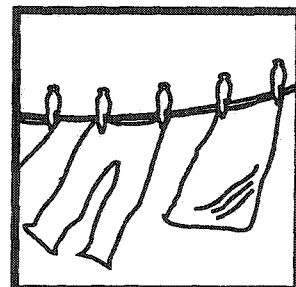


Water Checklist:



- **Drain** and flush hot water tanks every six months at least to prevent efficiency-reducing scale build-up and deposits.
- **Service** gas or oil burners regularly.
- **Test** all thermostats regularly.
- **Investigate** the possibility of solar water heating, which generally pays for itself in 5 years or less, after which it supplies 'free' hot water.

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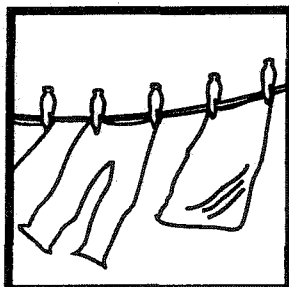


Water Maintenance Checklist:

- **Repair** any leaks in water piping system.
- **Repair** or replace leaky faucets, toilets, pump glands and valves.
- **Clean** and recondition hot water temperature mixing valves at least annually.
- **Check** insulation on hot water pipes and storage tanks frequently.
- **Flush** hot water tanks every 6 months, more frequently with very hard water; remove accumulated solids and sludge.
- **Remove** exterior scale buildup from electric hot water heater coils at least annually.
- **With** immersion type hot water heaters installed into the boiler shell, remove and clean scale from interior and exterior coil surfaces.
- **Check** water storage tank temperature controls every 6 months.
- **Test** all hot water controls and adjust if necessary.
 - ◆ Check the steam trap on steam hot water heaters; if it is leaking steam, repair or replace it.

To achieve your Green Partnership goals, you'll need the help of many other departments such as Purchasing, Plant Management, and Repairs and Renovations. Ask for their help, and discuss any special needs or problems with your environment committee.

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III. KITCHEN

The Kitchen and the Laundry are the two areas in any hotel which waste the most energy, produce the most pollution – and can create the greatest savings to both the environment and the hotel budget.

The recommended changes and checklists on the following pages are designed to help improve both the quality and the quantity of your working hours. By following them, wherever possible:

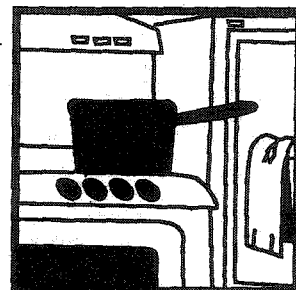
- Your kitchens should become much more pleasant work spaces.
- The quality of the meals they serve should improve.
- You should enjoy savings of at least 1/3rd in energy consumed, waste sent for disposal, and hot water used.
- Your equipment should operate much more efficiently.
- Repair and replacement costs of major equipment should be substantially reduced.

Review the check-lists carefully. Identify any special needs and/or operations. To achieve your objectives, you'll need help from colleagues in many other departments: don't hesitate to ask for it. And talk with your environment committee about specific concerns and problems.

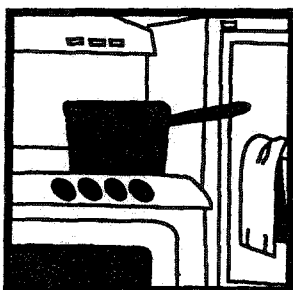
Kitchen 'Green Partnership' Checklist:

- **Eliminate** energy waste. (If it's not in use, turn it off!)
- **Eliminate** food waste.
- **Compost** everything suitable.
- **Stop** accepting needless packaging.
- **Reduce** water heating wherever possible.
- **Recycle** all jars, bottles, jugs, tins etc.
- **Stop** using aerosols; substitute pump containers.
- **Stop** using "disposable" items or dishes; when existing supplies are gone, use only re-usable flatware and dishes.
- **Replace** paper napkins or table coverings with linen. Yes, linen! (Laundering linen wastes less energy, uses fewer precious natural resources, and produces less pollution than throw-away paper or plastic items.)
- **Use** only phosphate-free automatic dishwashing detergents. (Liquid dishwashing detergents don't contain phosphates.)
- **Use** non-toxic cleaners wherever possible. An entire book of recipes for non-toxic, non-polluting cleansers is: *The Natural Book for Home & Yard* edited by Dan Wallace published by Rodale Press Inc., Emmaus, PA 18049

KITCHEN A 33% ENERGY SAVINGS



KITCHEN A 33% ENERGY SAVINGS



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- **Wipe** up spills with washable cloths instead of paper towels.
- **Install** photo-electric-cell activated faucets with pre-set temperatures where water is frequently used, as in a vegetable washing area or staff washrooms.
- **Set** up clearly identified and separate kitchen bins for:
 - recycling materials;
 - compostable materials;
 - regular garbage.
- **Inform** all kitchen staff what goes into each bin, and post prominent lists of acceptable contents above or near each bin.
- **Explore** the feasibility and cost-benefit aspects of retrofitting kitchens with Sunfrost solar-powered refrigerators.

Kitchen Energy Savings Checklist:

20% to 30% of a hotel's total energy need is used in the kitchen. Restaurant kitchens run close to 80%. It's also been estimated that as much as 60% of the energy consumed in the kitchens is not used to cook food.

The first rule of the hotel or restaurant kitchen must be:
Don't turn it on till it's needed; turn it off when it's not needed.

Kitchen Maintenance Checklist:

- **Set** up a regular daily/weekly/monthly cleaning and maintenance schedule.
- **Kitchen** dirt, dust, grease and grime clog filters, air ducts, fans and burners and restrict proper heat flow.
 - Clean grills daily (or even each shift);
 - Train griddle cooks to scrape and clean as they work.
- **Clean** fryers and filter the oil daily.
- **Clean** burners every week.
- **Keep** lights clean: a dusty bulb gives off only about two-thirds the light of a clean one but uses the same amount of energy.
- **Clean** windows every week.

These small items add together to create substantial savings.

Kitchen Electricity Savings Checklist:

Your electric bill is determined by two factors:

- a) a demand charge, the highest (or peak) kilowatt use for any short period during the month (usually a 15 or 30 minute period);
- b) an energy charge, based on your total consumption in kilowatt hours.

Because the demand charge is expensive, it's to our advantage to keep our peak usage as low as possible. Have your local utility company explain how demand metering and time-of-day metering are applied, and how to reduce your peak demands.

(See the 'Demand Charge Savings' example in the Green Contacts List.)

Kitchen Water Savings Checklist:

Water uses lots of power – to pump, to purify and to heat. Inexpensive flow restrictor valves on faucets provide even pressure but control water flow, saving as much as 4 gallons of water a minute on each tap.

Kitchen Energy Conservation Quiz

ANSWER TRUE OR FALSE!

1. Ovens should be turned on first thing in the morning, and left on all day in case they're needed.
2. Covering pots helps foods cook more quickly and reduces energy consumption.
3. Keeping a griddle clean improves its efficiency.
4. Keep the dishwasher working, washing dishes as they're received.
5. Always wrap potatoes in aluminum foil to speed baking.
6. Always preheat the oven.
7. To speed preheating, set the oven dial higher than needed.
8. Chilled and frozen foods should be stored a.s.a.p.
9. Turning lights on and off uses more energy than letting them burn all day.
10. Cover stand-by griddles to reduce heat loss.
11. Food cooks faster at a higher range-top temperature.
12. Kitchen exhaust fans must be on constantly while the kitchen is in operation.
13. Scheduling turn-on times of kitchen equipment helps conserve energy.
14. Washing vegetables under running water wastes little energy.
15. Deep fat fryers use the same amount of energy whether they're covered or uncovered.

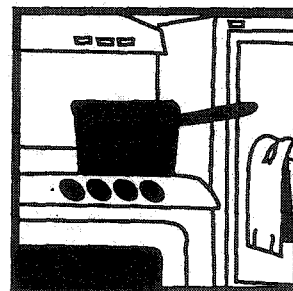
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Answers 3 - true 6 - false 9 - false 2 - false 15 - false
1 - false 4 - false 7 - true 10 - true 13 - true
2 - true 5 - false 8 - true 11 - false 14 - false

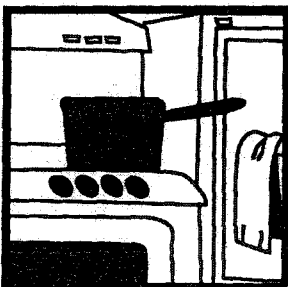
KITCHEN A 33% ENERGY SAVINGS



Kitchen Energy-Saving Checklist:

- **Schedule** pre-heating times for ovens, grills, broilers, fryers and other cooking equipment following manufacturers' suggestions; and post prominently by each unit.
- **Cook** the largest volume practical; many foods can be volume-cooked and frozen till needed.
- **Consider** a blast freezer for large volumes of food, to save production time, operating time, and hours of labour.
- **Try** turning off ice machines from late evening till early morning. If their insulation and gasketing are efficient, temperature change will be minimal.
- **Group** your hot appliances – grills, ovens and warmers – as close together as possible – and as far as practical from refrigerators and freezers.
- **Investigate** the possibility of installing side walls on your existing exhaust hoods; codes generally allow for lower exhaust rates from cubicles than from hoods.
- **Size** your exhaust fans to meet minimum code requirements. Many exhaust systems are greatly 'oversized' to meet any eventuality and remove far more conditioned air than necessary.
- **Have** walls and ceilings cleaned regularly; clean light-coloured walls reflect and multiply light, and save on energy.
- **Schedule** cleaning for daylight hours to save on heating and lighting.
- **Reduce** dishwasher temperatures to the lowest allowed by health regulations.
- **Position** hot water boosters within five feet of dishwashers; insulate pipes to avoid heat loss; shut dishwashers off when not needed.
- **Fence** griddles on three sides to reflect heat onto food.
- **Hold** regular training sessions and refresher workshops on equipment use and maintenance, and energy conservation.
- **Paint** with light colours which reflect light; this reduces wattage needed for adequate working light.
- **Consider** installing automatic shut-offs for:
 - ◆ Variable speed hood exhaust systems;
 - ◆ Dishwashers (to shut off 1-2 minutes after last rack);
 - ◆ Intermittent exhaust fans, such as used over dishwashers (to shutoff 2 - 3 minutes after dishwasher shuts off).
- **Install** twist-on timer switches for all storeroom lights.
- **Coordinate** deliveries to eliminate unnecessary opening of freezers and refrigeration units.
- **Install** solenoids on garbage disposal units for automatic cut-off of water and electricity.
- **Install** an 'in-meat thermometer' with outside-oven gauge so you don't have to open oven doors to check roasting progress.
- **Consider** installing plastic strip freezer 'doors' to reduce heat gain.

KITCHEN A 33% ENERGY SAVINGS



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- **Replace** equipment with the exact right size to do the job;

and take advantage of all available energy-saving features.

Food Preparation Checklist:

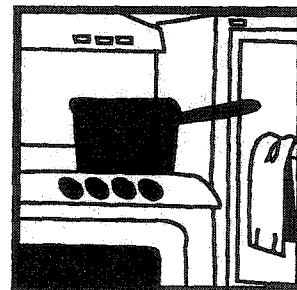


- **Break** the habit of turning everything on first thing every morning. Leave equipment off till it's needed.
- **Cook** at the lowest temperature that gives satisfactory results. Slow cooking reduces meat shrinkage; retains nutrients and better colour in all foods; and is more energy-efficient. (Roasting meat for five hours at 121 deg. C (250 deg. F) could save 25% to 50% of the energy required to roast it three hours at 177 deg. C (350 deg. F).
- **Longer** broiling time at moderate temperatures retains food juices, flavour and tenderness.
- **Always** turn char-broiler heat to medium after the briquets are hot; and keep briquets clean.
- **Aluminum** foil slows the baking of potatoes. For presentation, put foil on **after** potato is baked.
- **Placing** a weight on bacon and sausage on the griddle shortens their cooking times.
- **Lids** on pots and pans keep heated air in and decrease cooking time.
- **Turn** on cooking equipment (fryers, broilers, stoves) only as needed.
- **Turn** off cooling and heating units which aren't needed.
- **Operate** supply and exhaust fans only when and as required. Stagger equipment start-up times to avoid heavy peak electrical demand.
- **Immediately** following rush periods, turn off all but one of each type of equipment; (ie. 1 burner instead of 2, 1 fryer instead of 3); and lower the temperatures of idling equipment whenever possible.
- **Set** all cooking equipment thermostats to the lowest temperature that gives satisfactory results and is consistent with safe food-handling practices.
- **Cook** in the largest volume possible.
- **Don't** position fans to blow directly onto any cooking equipment or surface.
- **Thaw** frozen food in the refrigerator (this reduces the refrigerator's demand for electricity). Large volumes of food can be thawed on racks in steamers. If you must defrost foods quickly, a microwave uses much less energy for this job than any other heat source in your kitchen.
- **Thaw** all foods before cooking unless prohibited by product characteristics (as with French fries and pies). Thawed foods require one third less cooking time.
- **Use** cold water whenever practical. Hot water is expensive in power costs and pollution; use it only when you must.

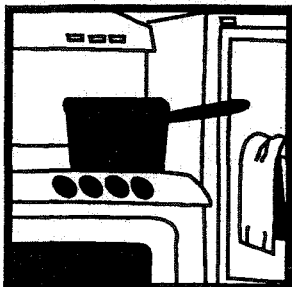


"Use up everything."
- says hometown
kitchen expert

KITCHEN A 33% ENERGY SAVINGS



KITCHEN A 33% ENERGY SAVINGS



(cont'd)

- **Don't** leave faucets running. (Put onions in the freezer for an hour before chopping them; you won't have to run the tap to carry-off that "itchy" gas.)
- **Washing** pots and clean and peel vegetables in a partly-filled sink, not in running water.
- **Using** hot tap water for cooking is more energy-efficient than heating cooking water on the range-top.
- **Clean** rotary toasters regularly; clean equipment performs more efficiently and uses less energy.
- **Turn** off toasters (& other appliances) when not in use.

A: Fryers Checklist:

- **Drain** and clean fryers and filter the oil at least once a day (or each shift, depending on use). Follow manufacturer's recommendations.
- **Don't** load fryer beyond manufacturer's stated capacity.
- **During** slack periods, turn fryer off or reduce to idling temperature and cover.
- **Turn** thermostat only as high as necessary to reach frying temperatures. In modern high-speed fryers, temperatures from 163 deg. C (325 deg. F) to 177 deg. C (350 deg. F) are ideal. (Too high a temperature wastes energy, and also causes the oil to break down.)
- **Preheat** according to manufacturer's specific instructions. Turn on gas fryer no more than 20 minutes before use.
- **Fry** in your fryer instead of on the range top; and don't turn on two fryers when one will do.
- **Remove** any water or ice from foods before frying to eliminate oil breakdown and temperature fluctuation.
- **Clean** heating elements at least once a week (daily if used for high volume frying); and remove any burnt food or grease that will interfere with efficient operation.

B: Griddles Checklist:

- **Whenever** possible, huddle food close together on the griddle, and heat only the portion of griddle being used.
- **Heat** griddle only to temperature required for food being cooked. A low or medium flame is best for griddling.
- **Never** overheat a griddle in the interest of speed; it wastes gas, and the cooking results could be disastrous.
- **During** slack periods, turn griddle burner down and turn off non-needed sections.
- **Scrape** griddle surfaces clean of excess food and fat with a flexible spatula or other device after each cooking load.

C: Broiler Operating Procedures Checklist:

- **Preheat** broilers no longer than manufacturer's instructions recommend; monitor preheat times with thermostats or timers.
- **Load** heated broilers to top capacity when practical, to use the entire surface area.
- **Heat** only those sections as required by the cooking load.
- **Turn** char-broilers to medium as soon as briquets are hot.
- **Turn** broiler flame to low between broiling operations; turn off completely during slow periods.
- **When** possible, use infrared broilers; they can be turned off when not in use, and reheat quickly.

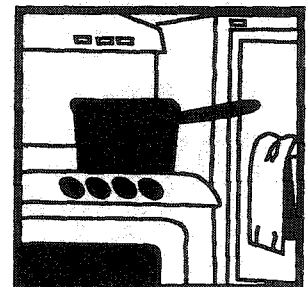
D: Broiler Maintenance Checklist:

- **Lubricate** broiler valves regularly.
- **Check** flue for proper draft and remove any obstructions.
- **Have** a qualified utility company service rep check air shutters to ensure air/gas mixture is correct.
- **Adjust** and clean pilot lights.
- **Check** and clean burner holes on gas broilers.
- **Have** a service rep check gas burners every six months.
- **Rearrange** the ceramic material in under-fired broilers once a month to assure even heat.
- **Check** ceramic and metal radian for deterioration. If blackened or cracked, replace.

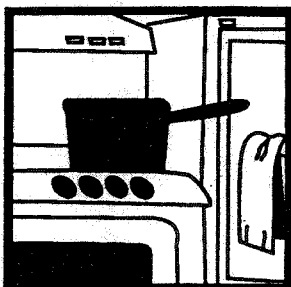
E: Oven Operating Procedures Checklist:

- **Cook** foods during oven-warming period; only bakery goods need wait until the oven is at the correct temperature.
- **Begin** the day's baking or roasting with foods that require the lowest oven temperature. (Starting out at a high temperature and then letting the oven cool down wastes energy.)
- **Plan** baking and roasting so that foods requiring the same temperature are cooked at the same time.
- **Load** oven to capacity; in standard ovens, maintain a 2-inch clearance, for proper air circulation (forced-air convection ovens require less clearance).
- **Maintain** a baking and roasting schedule to ensure full use of oven capacity, and to help reduce operating hours.
- **Determine** the cooking capacity of all your ovens; always use the smallest or most efficient one available.
- **Use** a second oven only when cooking schedules overlap unavoidably.
- **Load** and unload ovens quickly, and don't open the door during operation. (Every second the oven door is open,

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(cont'd)

the temperature drops about 10 degrees. It takes a lot of energy to bring the temperature back to where you need it.) Also, food cooks faster and loses less moisture if the oven door is kept closed.

- **Preheat** ovens for bakery goods only. When pre-heating, set the thermostat at the desired temperature; the oven won't heat any faster at a higher setting, and it wastes energy.
- **Clean** the interior oven walls

and elements to achieve better heat transfer.

- **Vacuum** crumbs from oven burners each week; they absorb and waste energy.
- **Keep** the lower edge of the oven door free of food particles so it will seal properly. Air leaks are energy leaks.
- **Keep** microwave interiors clean of spills and food particles. Never clean microwaves with abrasives; they may damage the oven surface and reduce its efficiency.

F: Ovens Maintenance Checklist:

- **Check** gas pressure monthly to ensure correct pressure for complete combustion.
- **Have** a qualified service rep calibrate thermostats, inspect burners, door closings and insulation every few months.
- **Adjust** air/gas mixture and set pilot light to lowest possible flame at least annually.
- **Adjust** door hinges, gaskets, and moldings as needed for a tight fit.
- **For** maximum energy efficiency and correct cooking temperatures, calibrate oven thermostats every month. You may want or need a service rep

to do this.

- **Check** the flue for proper draft and remove any obstructions.
- **Use** an efficient exhaust canopy which uses the correct mixture of exhaust and make-up air.
- **Position** ovens properly under exhaust canopies.
- **Have** a service rep check microwave ovens regularly for radiation leaks. Have the safety interlock, magnetron and timer checked annually.
- **Clean** fan blades on convection ovens according to manufacturer's instructions (dirt restricts the amount of air delivered); and have the motor checked annually.



G: Ranges - Operating Procedures Checklist:

- **Cover** pots and pans whenever possible, to reduce cooking time and energy.
- **Use** black or dull-finished pots;

they absorb heat better than shiny pots. (No, this does not mean, "don't clean them!")

- **Save** gas by grouping pots and pans closely on solid top ranges and lighting only those

(cont'd)

burners needed.

- **Use** flat-bottom utensils on solid top ranges. Almost any type of pot or pan can be used on an open top gas range, because the flame shapes itself to the pan.
- **When** using a gas range for full heat conditions, the top of the flame should just touch the

bottom of the pan or kettle.

- **Lower** heat to simmer as soon as liquids begin to boil. Water and water-based liquids boil at 100 deg. C (212 deg. F); turning heat higher doesn't cook food faster, it just wastes energy.
- **Cook** at the lowest temperature that gives satisfactory results.
- **Turn** off the range when it isn't needed.

H: Ranges – Maintenance Checklist:

- **Check** gas burners periodically; if the flame is yellow or uneven, clean burners with a wire brush and make sure holes are clear. If trouble persists, have service rep adjust gas/air mixture.
- **Keep** burner valve handles lubricated with a high-temperature valve grease designed for this purpose. Your service rep can do this during regular maintenance checks.
- **Adjust** and clean pilot lights.
- **Inspect** automatic burner lighters and safety controls.
- **Check** thermostats for accuracy, and calibrate if

necessary.

- **To** clean burners and coils on open top ranges, remove encrusted matter from cool heating elements, then soak them in water and a good grease solvent. Burners should be boiled in a solution of salt, washing soda, or non-phosphate detergent.
- **With** closed top ranges, lift or remove the hood periodically to be certain burners are functioning properly.
- **To** clean closed top ranges, rub vigorously with heavy burlap or a wire brush after the top surface has cooled somewhat. Always remove cooked food lodged under burners, lid rings, or plates.



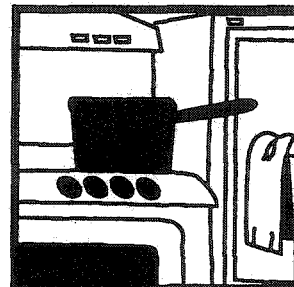
I: Steam Cooking – Operating Procedures Checklist:

- **Fill** cooking vessels according to manufacturer's recommendations, to capacity, if possible. The amount of steam used is almost the same whether cooking a small or large amount of food.
- **Turn** off the steam unless

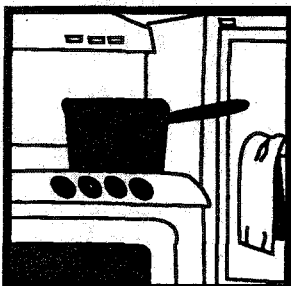
actually cooking. Pre-heat times are short, so the equipment should not be kept running.

- **Use** a steamer to start cooking food whenever possible; and finish cooking in the conventional manner.
- **Thaw** frozen food in steam vessels rather than in boiling water. Thaw racks of frozen food in volume; Space food to permit steam to circulate around

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each item. Food should be fully cooked immediately after being thawed.

- **Clouds** of steam indicate unnecessarily high temperatures.

Dial temperature down to reduce both the amount of energy required to operate the steam table and the load on your heating, ventilating and air conditioning system.

J: Steam Cooking – Maintenance Procedures Checklist:

- **Establish** a firm schedule for cleaning steam cooking equipment; always use a non-toxic cleaner.
- **Flush** boilers at least weekly.
- **Remove** all deposits such as rust, lime, film and scale from the water jacket and outside of container.
- **Repair** all steam leaks, no matter how small.



- **Inspect** all steam traps for steam leakage.
- **Keep** all seals clean and tight to prevent steam leakage into kitchen.
- **Inspect** the insulation on steam lines for damage. Light-gauge sheet metal may be used to protect insulation where steam lines are exposed to damage. If damaged, replace insulation promptly.
- **Regularly** check thermostats for accuracy and calibrate if necessary.

K: Dishwashers – Operating Procedures Checklist:

- **Don't** turn on dishwasher till it's fully loaded; it uses the same amount of energy and hot water full or empty.
- **When** main dishwashing rush is over, turn off booster heaters and accumulate dishes until next rush period.
- **Turn** water heater down to 24

deg. C (75 deg. F) when kitchen closes, and turn back up two hours (or warm-up time required by your particular unit) before opening.

- **Check** rinse water regularly for excessive temperature.
- **Check** that the power rinse is turning off automatically when the tray goes through the machine.
- **Use** a wetting agent instead of a power dryer.

L: Dishwashers – Maintenance Procedures Checklist:

- **Check** insulation of water lines in recirculation loop.
- **If** there is no automatic fill with

shut-off, provide squeeze-type valve to avoid wasting water by overfilling.

- **Inspect** the feed and drain valves and pumps weekly for water leakage.
- **Remove** lime deposits from

(cont'd)

spray nozzles; ream nozzles with a wire when white deposits become visible at the openings.

- **Remove** lime deposits from tanks and heater coils.
- **Lubricate** speed reducer on conveyor-type washers regularly.
- **Ensure** that the power rinse turns off automatically.
- **Set** flow controls for proper amount of rinse water.
- **Adjust** power dryer to deliver

heated air just long enough to barely dry dishes.

- **Drain** and flush hot water heater at least every six months.
- **Check** accuracy of thermometer and recalibrate if necessary.
- **Make** regular checks of rinse water to avoid excessive temperatures.
- **Install** pressure-reducing valves to control water pressure for rinsing.

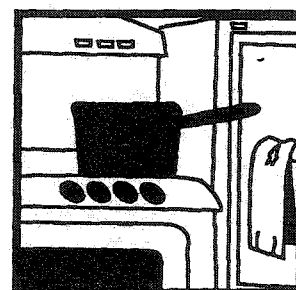
M: Refrigerators & Freezers – Operating Procedures:

- **Thaw** frozen foods in the refrigerator whenever possible; the thawing food cools the surrounding air, and the refrigerator operates more efficiently and needs less power.
- **Don't** place hot food in a cooling unit, but let it cool (in accordance with safe food handling practices) before refrigerating or freezing.
- **Plan** ahead so that anyone entering a walk-in unit or opening refrigerators or freezers can pick-up or replace several items at one time. Frequent and lengthy door openings waste energy.
- **Use** trays or mobile racks to reduce the time refrigerators and freezer doors need to be open.
- **Place** frequently used items at front of each unit to reduce the length of time the doors are open.
- **Clearly** label stored items; tape

a diagram showing location of items to the outside of refrigerator and freezer doors.

- **Avoid** using walk-in coolers for items such as individual salads, which require frequent door openings.
- **Turn** off the lights when leaving walk-in coolers. Lights produce unwanted heat as well as wasting energy.
 - **Install** exterior signal light switches in walk-in units to warn if lights are left on.
 - **Don't** place items in front of refrigeration coils in a way which restricts airflow.
- **Be** sure items do not jam against closing doors; they could damage door gaskets and cause leaks.
- **Defrost** freezers frequently; ice buildup should never exceed 1/8" on walls and shelves.
- **Consolidate** food where possible to reduce the number of refrigerators and freezers in use. Full units use energy more efficiently than partially full ones.
- **Schedule** food deliveries where possible to avoid either

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overloading or under-using refrigeration facilities.

- **Store** foods requiring refrigeration or freezing promptly; re-cooling foods wastes energy, and may affect their quality.
- **Close** ice-maker storage bins after each use.

- **Don't** store anything within 4 feet of the refrigerator compressor.
- **Cover** all liquids stored in the refrigerator; moisture from uncovered liquid raises the temperature inside the refrigerator, causing it to work harder and waste energy.

N: Refrigerators & Freezers – Maintenance Checklist:

- **Maintain** proper tension on refrigerator compressor belts; replace any that are worn or damaged.
- **Inspect** and service all electric motors, fans and compressors on a regular basis.
- **Keep** all door gaskets, seals and hinges in good condition. Try the dollar bill test: Close the door on a bill. If it falls to the floor, the gasket needs replacing. (No! A "loonie" won't do!)
- **Lubricate** latches and hinges with food grade oil.
- **Check** thermostats for proper calibration.
- **Feel** the outside walls of refrigerators and freezers for

cold spots; they indicate insulation failure.

- **Check** compressor for leaks and level of refrigerant.
- **Check** refrigerators for loss of temperature control and short cycling problems. If the unit is not operating properly, check the refrigerant level.
 - **Keep** the refrigerator blower coil free of ice build-up as well as dirt, dust and grease.
 - **Brush** the condenser.
 - **Have** a service rep adjust the freezer defrost cycle so it will defrost during off-peak hours.
- **Level** these units periodically. Doors should fit correctly and close automatically from an open position.
- **Install** warning lights to indicate when light is on in walk-in units.



O: Lighting Checklist:

- **Keep** fixtures; bulbs, ceilings, walls and windows clean; dirty fixtures or walls, can reduce lighting efficiency by as much as 50%. To prove a point, measure the footcandles of a fixture with a light meter before

and after cleaning.

- **Ask** the people working in each area to help decide on satisfactory light levels; each individual's light requirements vary depending on age and physical condition. If lighting is inadequate, productivity will suffer.

(cont'd)

- **Position** light switches so they're convenient and visible; employees are more apt to cooperate in energy conservation if it's easy.
- **Install** additional switches in areas that don't always require full lighting, so lights not being used can be turned off.
- **Use** stickers on light switches to remind staff to 'switch-off' when leaving a room.
- **Replace** resistance dimmer switches with solid state dimmers to control lighting.
- **Rearrange** work stations if possible to make use of shared common lighting.
- **Consider** installing 'task lighting' for employee work stations.
- **Ensure** your maintenance department does the following –

- check automatic lighting controls every day;
- clean windows, skylights every 3 months or as required;
- clean lamps, fixtures, every 6 months or as required;
- clean ceilings and walls.

- **Replace** incandescent lighting with fluorescents wherever feasible.

• **Where** fluorescents are already in use, consider the use of lower wattage 'watt-saver' or 'watt-miser' tubes, which use less energy with only a minor reduction in light output. Use natural light, except when it interferes with temperature control.

- **Use** the minimum amount of light needed in your work area, and turn lights off when you're leaving the room for 15 minutes or more.

P: Water Checklist:

- **Drain** and flush hot water tanks at least every six months to prevent scale build-up and deposits which reduce heating efficiency.
- **Service** gas or oil burners regularly; check all frequently.
- **Examine** the possibilities of

solar water heating; water pre-heated by solar energy requires less energy in other forms to raise the temperature to the desired levels. Solar heating installations pay themselves down in about five years, after which they supply 'free' hot water with minimum maintenance.

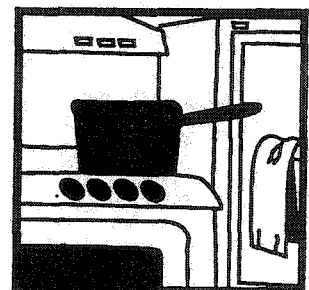
Q: Water – Maintenance Checklist:

- **Repair** leaks in water piping system.
- **Repair** or replace leaky faucets, toilets, pump glands and valves.
- **Clean** and recondition hot

water temperature mixing valves at least annually.

- **Check** insulation on hot water pipes and storage tanks frequently.
- **Flush** hot water tanks every six months, more frequently if water is very hard, to remove solids and sludge.

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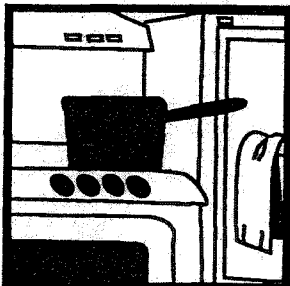


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- **Remove** exterior scale buildup from electric hot water heater coils at least annually.
- **With** immersion type hot water heaters installed into the boiler shell, remove and clean scale from interior and exterior coil surfaces.
- **Check** water storage tank temperature controls every six months.
- Test hot water controls and adjust if necessary.
- **Check** the steam trap on steam hot water heaters; if steam is passing through the trap, repair or replace.

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IV. GROUNDS & GOLF COURSE MANAGEMENT



Greening the grounds, naturally:

Mostly, we tend to treat our outdoor grounds and gardens as we do our indoor flower pots: pump in chemical fertilizers to get quick results or showy blossoms, but fail to nourish the soil in terms of its long-term health. In time, our grounds and gardens become as dependent on their 'chemical fix' as any human addict.

A Simple Solution: Composting

Consider what we throw away as waste. Every year, the average Canadian family throws out:

- as much iron as is contained in 500 eggs;
- as much protein as is provided by 60 steaks;
- and vitamins equal to 95 glasses of orange juice;

all this just in discarded potato peelings!

We can eat all that good stuff; or we can put it in our soup stocks; or we can return it to nature by composting it and getting all those otherwise wasted nutrients back in next year's summer vegetables.

If you use compost, you needn't use artificial fertilizers ever again; because, like them, compost supplies the three main nutrients needed for plant growth – nitrogen, phosphorous and potassium.

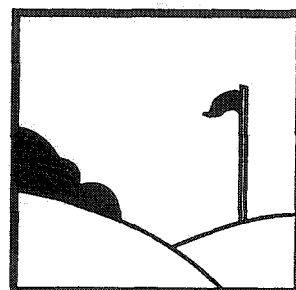
However, unlike commercial fertilizers, composting supplies its nutrients in a natural 'trickle release' system; plants aren't 'burned' by too much fertilizer, too fast; nor is the bulk of the fertilizer, as with many commercial products, flushed into the water table by rain and garden watering.

Composting dramatically improves the structure of the soil, its drainage, and its aeration. Every year that you compost, the soil becomes darker, richer, easier to work, and more free of pests.

Composting can actually protect plants from heavy metals in the soil and air. Well-rotted compost 'binds' and collects lead and aluminum in the soil, and helps prevent their being taken up by garden produce. This is not a minor benefit!

For detailed information on how-to compost, call your local provincial or federal Department of Agriculture office or your

GROUNDS & GOLF COURSE GREENING THE GROUNDS



nearest university; or consult the Green Contacts List; or buy:

The Rodale Guide to Composting
published by Rodale Press, Inc.

33 East Minor Street

Emmaus, Pennsylvania, U.S.A. 18049

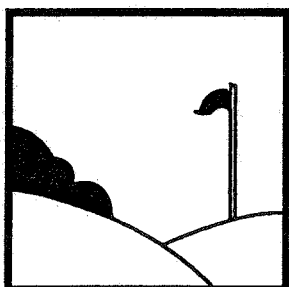
(P.S. Rodale also publishes a superb monthly magazine called Organic Gardening.)

Products to Supplement Composting:



- **Composted** manure, blood meal, bone meal, fish emulsion and seaweed are all good for gardens and lawns.
- **Loblaws**, with the endorsement of Pollution Probe, markets Nature's Choice 100% Natural Source Fertilizer, for lawns and gardens, as well as several other environmentally friendly garden products.
- **The Safer Company** markets several organic plant foods, primarily for indoor plants.
- **The Went-Hal Company** markets everything from composted sheep manure (great for strawberries) to black earth and potting soil, under the trade name Organix.
- **The So-Green Corporation**, which also uses the trademark names 'Lawn Pro' and 'Nature's Garden', concentrates on natural and organic fertilizers. Their lime, bone meal and blood meal are natural, as is their 'High Organic Lawn Pro' fertilizer.
- **C-I-L**, in common with most gardening suppliers, markets an apparently chemical-free bone meal. C-I-L's 'Fortified Organic' fertilizer also looks okay.
- **Canadian Organic Growers** has a source list of organic fertilizers, natural pest controls, trade associations of organic food producers and distributors, and a considerable research library.

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About Lawns:

- **If** you've no shortage of water, soak lawns once every week to ten days with a solid watering of from 2 to 4 hours. It's enough if, after you finish watering, it slurps when you walk on it.
- **If** water is in short supply, install a drip irrigation system. They can be expensive, and need annual maintenance – but they save a lot of time, are very efficient, pay for themselves eventually in water savings, and are terrific in rain-short areas.
- **Mulching**: sprinkle lawn surfaces with water-retaining substances such as peat moss or compost;
- **Aerating**: punch holes in the lawn and let oxygen into the soil.
- **Mowing**: Always cut grass 2" to 3" high; it will shade and kill most weeds.
- **Weeding**: what's so bad about a few weeds in the lawn. If you

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really find dandelions
unattractive, dig them out.
Clover is pretty. And the greater

the diversity, the healthier the
soil and the better the
ecological balance.

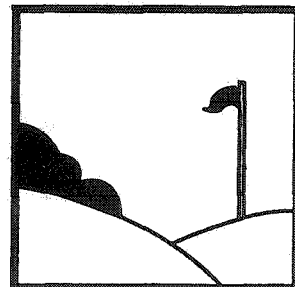
Watering Gardens During Really Dry Spells:

- **Sprinkle** plants several times each summer, to wash-off smog and traffic grime, which interfere with photosynthesis and reduces crop yields.
- **Use** the "clay pot" system (used in China for over 2,000 years) for precious plants and shrubs.
 - ◆ Dig a hole beside each tree or shrub to be irrigated (or every 6 to 10 feet along a row of plants;
 - ◆ Place an unglazed porous earthenware pot in each hole (old flowerpots are good). To test for porosity, stand them in water for a while; if they become moist inside, they're okay.
 - ◆ Plug or caulk any drainage holes.
 - ◆ Fill pots with water, and cover to prevent evaporation. The water will slowly seep into the soil. (To channel water to plant roots more quickly, thread a "wick" of old cloth through the drainhole and lay its end alongside the plant's roots.)
 - ◆ P.S. The Chinese fortified the soil around the pots with manure.
 - ◆ Refill pots with water every 4 to 8 days.

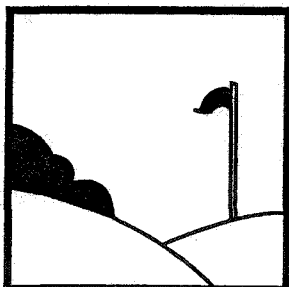
Chemical Pesticides: a BIG NO-NO!

- **We** have no data at all on the potential toxicology of 38% of the pesticides in current use in Canada; and no understanding of what happens when they combine in our environment with each other or with other pollutants.
- **We** have enough data on one-tenth of current pesticides to assess their health hazards. Several are known to contain likely cancer-causing agents.
- **One** extremely common weed killer, 2,4 - D, has recently been identified as the possible cause of a particular form of cancer - "non-Hodgkins lymphoma", a disease which has doubled in Canadian cases diagnosed since 1950. 2,4-D is the most popular poison-of-choice to kill weeds in parks, on golf courses, and on suburban lawns. To its everlasting credit, Toronto stopped using 2,4-D in its parks in 1980. Whatever else you may choose to do or not do, don't buy or use 2,4-D!
- **60%** to 90% of pesticides by volume miss the target entirely, and go into our air or our water table and poison many plants, animals and insects we want to keep alive.
- **Only** 0.1 % of insects in the garden are "pests"; many of the rest "work" on our behalf at no pay. Eg: worms aerate our soil; ladybugs eat aphids.

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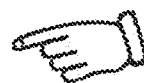
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- **Consider** stocking your garden with natural killer insects such as the praying mantis, a voracious eater of mosquitoes and other insects. You can also buy insects that gobble up whiteflies, spider mites, aphids, thrips, or

whatever. Write to:
Pat Coristine,
Better Yield Insects,
P.O. Box 3451
Tecumseh Station
Windsor, Ontario,
N8N 3C4
Phone: 519-727-6108

Old-Fashioned and 'Guaranteed' Insect Remedies:

- **Slugs** love to congregate under a board on the ground. Leave some pieces of wood overnight in the garden; every morning, give the shrubs a funereal bath in hot soapy water.
- **Snails** congregate in cool, shady places. Put an overturned clay pot in the shade; snails will climb its sides and bunk in tiers. Gather them in the early evening for fresh escargots –
- if you're feeling adventurous – or for a memorial service.
- **Slugs** and snails are also partial to warm beer. Place a shallow dish of it in the garden; watch them die happily.
- **Insects** can often be hosed off sturdy plants; or wiped off with warm, soapy water. (If you use the latter, rinse the leaves with the hose afterwards.)



Some 'Least Dangerous & Last Resort' Pesticides:

If biological and ecological balance fail – if compost, mulch, birds and insects, benign bacteria, and fervent prayer don't ward-off the pests in your garden – here are some least-dangerous and last-resort ways to get rid of the "foul-ies" at the bottom of your garden.

- BT: The safest and most effective pesticide is chemically named "Bacillus thuringiensis" – "BT" to its friends.
- ♦ BT is sold under the following trade names, among others: "Botanix", "Dipel", "Envirobac" and "Thuricide".
- ♦ C-I-L markets Thuricide in a container labelled: "Organic Insect Liquid Killer".
- ♦ BT kills cabbage worms, cutworms, gypsy moths, any forms of caterpillar (including tent caterpillars and nascent butterflies), potato beetles, black fly and mosquito larvae.
- ♦ Apply BT directly to the plant; for cutworms, to the soil. It breaks down in sunlight, so apply in the evening. It washes away; so repeat applications if it rains.

- "Diatomaceous Earth" massacres earwigs, silverfish, ants and cockroaches.

◆ DE consists of the sharp splintery remains of crushed wee coral-like creatures, which punch holes in the waxy shells of insects so they die of dehydration. DE kills all insects which encounter its barbed personality.

◆ DE brand names: in Quebec - "Insectigone", made by Chemfree Environment, Ltd.; elsewhere in Canada - "Fossil Flower", distributed under the "Green Cross" trademark, by a Ciba-Geigy firm. (N.B. Many other "Green Cross" products are based-on 2,4-D, so the labels: a "green cross" on the package does not necessarily mean the contents are organic or non-poisonous.)

- "Rotenone" and "Pyrethrum" are two broad spectrum insecticides (i.e., they kill lots of things) which are extracted from plants, aren't known or suspected to be carcinogenic, and are relatively non-poisonous to mammals (ie: pets and kids).

◆ Both Rotenone and Pyrethrum dispatch any cold-blooded beasts, including frogs and fish, so don't use them near waterways.

◆ Brand names for Rotenone: "Atox", "Rotenone", and "Deritox".

- "Roach and Crawling Insect Killer" is a dust containing both Diatomaceous Earth and Pyrethrum. It's distributed by Safer Garden Products, a Canadian company which markets a wide range of herbicides, pesticides and fertilizers through health food and specialty stores, hardware stores and several chains, including Canadian Tire, Zellers, Loblaws and Woolco. For a catalogue, write:

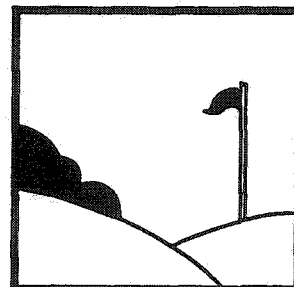
Safer Ltd.
Unit 1, 455 Milner Avenue
Scarborough, Ontario
M1B 2K4
Phone: 416-291-8150

- "Dormant Oil Spray", used by commercial orchards, suffocates mites, scales and other insects if applied to fruit trees, before budding.
- "Tanglefoot", well-named, is painted on trees and protects them from caterpillars, ants, canker worms, etc. It's a gluey substance which shrinks as it dries and can damage tender trees. To avoid



"Here, have some nice warm beer."
- says gardener to slugs

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strangling the tree, first paint a swatch of white latex around the trunk; then paint Tanglefoot on top of the latex. Crazy Glue it ain't, but ants will think it is.



Make Your Own Natural Pesticides:

- Chop rhubarb leaves and brew them in boiling water. These leaves, in common with the leaves of oleander, contain oxalic acid, a poison to humans and insects alike. (N.B. If you make this recipe, label it 'POISON' and store it in a safe place.)
- A natural pesticide spray: burr up some garlic and green onion tops in your blender or food processor; strain and mix with soapy water; pour into an old pump spray container.

Remember: The best protective measures are, still and always:
Cultivation • Weeding • Composting • Mulching

Develop a Natural Wild Garden.

Create a fully-rounded garden natural wild garden to attract the birds and insects you need to keep pests down, and to supply them with the sanctuary they need.

Select an un-needed space and seed it with a mix of perennials such as daisies, corn flowers, poppies, chamomile, columbines and astors; then let it go wild (that's the whole point).

Once established, your natural wild garden will re-seed itself year after year; you won't need to mow it; and it will need only minimal cultivation and tending.

For more information on how to make your gardens as environmentally friendly as possible, buy:

How To Get Your Lawn and Garden Off Drugs
published in Canada by Friends of the Earth.

You can buy it for \$12.95 at some bookstores, Loblaws, or directly from Friends of the Earth. Their address is:

Friends of the Earth
Suite 701
251 Laurier Avenue
Ottawa K1P 5J6
Phone: 613-230-3352

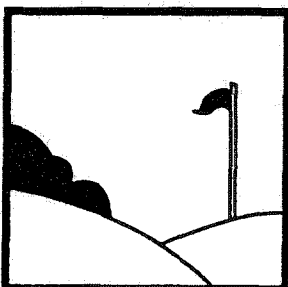
Discouraging birds: (If you must!)

Mary Perlmutter of Canadian Organic Growers had this to say:

"Birds are a wonderful and extremely beneficial part of our ecosystem. They eat their weight in insects, every day."

There are a zillion home recipes to discourage birds, from

GROUNDS & GOLF COURSE GREENING THE GROUNDS



scarecrows to hanging foil pie plates, streamers, and wind chimes in the garden. Here are three more possibilities:

- Cover what you want to protect (berry bushes, etc) with netting with a 1 cm. weave.
- Buy a fake owl from your gardening centre for about \$19.95; perch it on a conspicuous branch; and move it every few days.
- Best of all, don't discourage the birds – encourage them! (Toss them bread scraps the year 'round.)

Plant More Trees:

Trees are far more than just another pretty face. Trees produce oxygen; and the more trees we all nurture, the healthier our planet.

Trees also provide a shady spot on scorching days, and shelter for birds which eat the insects we'd as soon do without.

Don't Burn Garden Trash:

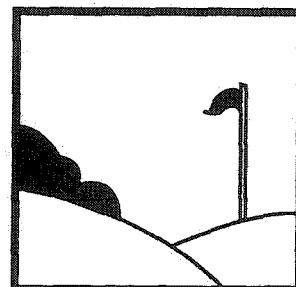
Even if your local laws permit bonfires, don't do it.

- You're wasting valuable composting and mulching material, and robbing the grounds of priceless humus.
- Ordinary garden bonfire smoke contains 350 times as many parts per million of cancer-causing benzopyrenes as cigarette smoke. Think of everyone downwind of your Hallowe'en bonfire.

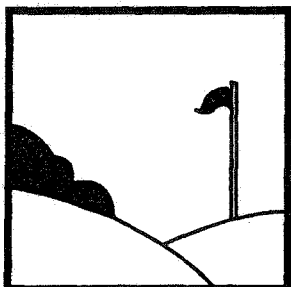
Major Goals for Grounds and Golf Courses Departments:

- **Compost** or mulch all possible yard waste and cuttings.
- **Use** chemical-free, organic insecticides.
- **Eliminate** needless and wasteful packaging on products coming to your department.
- **Reduce** water consumption don't wash off driveways, etc., sweep them clean. Washing them down with filtered, purified, chlorinated water is about as sensible as washing your car with champagne.
- **Get** rid of all toxic materials in your inventory; don't buy or use them in future.
- **Create** landscaping to attract the birds and beneficial insects which dine on pests from aphids to mosquitoes.
- **Recycle** all your cardboard, glass, plastic and metal containers.
- **Use** solar outdoor lighting where possible.

GROUND & GOLF COURSE GREENING THE GROUNDS



GROUNDS & GOLF COURSE GREENING THE GROUNDS



Grounds Maintenance Checklist:

- **Plant** grass all around buildings to help keep them cooler in summer; grass absorbs the sun's heat, rather than reflecting it onto buildings as asphalt and concrete do.
- **Where** possible, keep parking lots well away from building, for the same reason.
- **Plant** low growing shrubs in front of large windows; they have the same cooling benefit as grass.
- **Grow** climbing vines on building walls (particularly west walls); they absorb the sun's rays and provide some insulation against the transfer of heat through the wall.
- **Deciduous** trees planted between your building and the path of the sun offer shade in the summer; let sun through in the winter.
- **All** plants, even grass, act as natural "air scrubbers", absorbing exhaust gases from vehicles and building exhaust fans, and producing oxygen.
- **Have** experts from a local nursery advise on trees, shrubs and plants suitable for your location, and help you to choose those which require little care and will thrive on the water they receive naturally.



Swimming Pool Maintenance Checklist:

- **Don't** operate your pool pump 24 hours a day unless local regulations demand it. Continuous energy requires more energy and increases the rate of evaporation. (A pool 36' x 18' can lose over 2,000 gallons of expensively treated and filtered water monthly, through evaporation.)
- **Don't** leave your pool uncovered when not in use; it's heating the entire neighbourhood. Covering your pool saves heat, reduces evaporation. (and water and chemical costs).
- **Efficient** pool covers include foam plastic blankets and air-cell type plastic sheeting.
- **Reduce** chemical costs by adding disinfectant in the early morning or late afternoon while the filter is operating, to avoid excessive burn-off from the sun.
- **Check** out solar heating to help heat your pool. Many styles of solar pool heaters are available, ranging from free-standing to roof-mounted. Almost all existing pools can be adapted to use a solar heater.
- **Other** pool-heating energy possibilities include using heat pumps, or re-using heat from the central air conditioning system, to heat pool water.
- **Have** a thermal consultant examine any heat sources which could be recycled and thereby reduce your pool operating costs.



(cont'd)

- **Don't** use your heater when the pool's not in use – an automatic timer is essential.
- **When** the pool is not in use, leave on only the minimum lights necessary for safety and security.
- **Use** the smallest pump possible to operate the pool vacuum to avoid losing excessive water.
- **Keep** pool deck area clean and plantings trimmed to avoid debris in pool. Needless cleaning and filtering waste energy.

Grounds Management Checklist:



- **Install** timers to control operation of outdoor lighting, illuminated signs, decorative fountains, swimming pool pump (where permitted by local regulations), and swimming pool lights and heaters.
- **Check** out solar-powered lights for grounds lighting.
- **Locate** parking lots on the cool sides of buildings, if possible;
- the asphalt, and glass and metal of cars reflect sunlight on to your building.
- **Use** pool covers that are easy to handle; the simpler they are, the more likely they'll be used regularly.
- **Don't** keep the pool open any longer during the season than is reasonable and energy-cost-efficient.

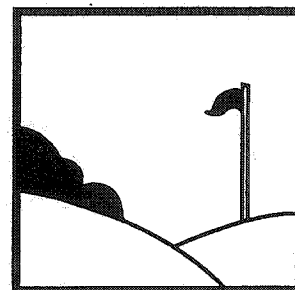
Grounds Maintenance Checklist:



- **Turn** off lawn mowers and other energy using equipment when not moving. Idling engines pollute, and waste fuel.
- **Keep** the outsides of room air conditioners free of anything that might obstruct free air flow, including shrubbery.

And remember: talk with your environment committee, and with your Purchasing, Waste Disposal and Plant Management colleagues; you'll need their help to meet CPH&R's green targets, just as they need yours.

GROUND & GOLF COURSE GREENING THE GROUNDS





V. ROOMS DIVISION

Room Division's ability to meet its Green Partnership goals and responsibilities is affected by every other CPH&R Department. Equally, every other Department needs the encouragement, help and support of Plant Management to meet their green goals.

Study the manual carefully; and implement as many of its suggestions or ideas as make sense in your operation. The Repairs and Renovations Department check lists have special relevance to energy savings, and could save you annual energy costs in the high five figures (or more).

Your single greatest task is to make it easy for other Departmental personnel to obtain your support, information and cooperation. Work closely with your environment committee; and solicit suggestions from every department. As we all know, the 'hands-on' people are always the first to see what's most needed, and what can best be done.

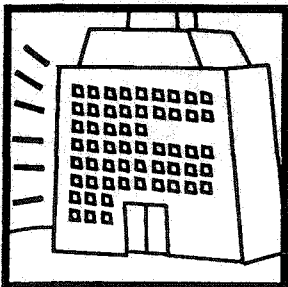
Discuss the detailed recommendations which follow with your colleagues. See which can be phased in most quickly, and assign monitoring responsibilities to department heads and their green partners. Remember – the more energy you save, the higher your profit margins.

Guest Relations/Information Tent Cards – Checklist:

Identify where Information Tent Cards are needed; ensure that they're available, replaced as needed, and checked daily by service staff. For example:

- **Room** cards asking guests to turn-off lights and radios and TVs when not in use, to report dripping taps or faulty plugs, to avoid leaving windows open, etc.
- **Room** cards explaining newly retrofitted fluorescent bulbs and the supply of recycled facial tissue; (it's vital that guests understand why we are doing these things, and the environmental benefits they provide.
- **Bathroom** card explaining water-saving shower heads, aerator taps, recycled toilet tissue and potpourri in place of chemical deodorizers.
- **Amenities** basket card describing the GEMS program, etc.
- **Room** card or sticker for the Blue Box, describing the recycling plan and the staff's voluntary participation in the extra duties of sorting and collecting recyclable items.

ROOMS DIVISION HANDS-ON GREEN MANAGEMENT



Other Guest Room Information Pieces:

- **Guest** room stationery imprinted with a message, such as:
This is recycled paper
I'm a CPH&R Green Partner
- **Room** service menu messages explaining why wasteful single-serving sugar, cream, spreads and condiments are no longer used on room service trays and tables.
- **Inserts** in appropriate sections of the guest room information folders describing and explaining the CPH&R Green Partnership Program as it affects the swimming pool, golf course, gardens, room thermostats, etc.
- **A** name and telephone number for the hotel environment committee, for any guests wanting more information.
- **A** list of CPH&R green products available in the news-stand.
- **Table** tent cards or Wine Card/Menu inserts describing the selection of organic beers and wines being offered.

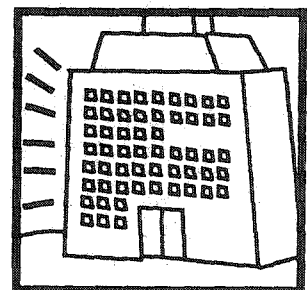


"It's a beaut-ee-full world."
- says guest who loves conservation measures

Front Office & Public Areas Checklist:

- **Conduct** an energy audit to identify areas of energy waste; then correct them.
- **Turn** off lights that aren't in use. A ballroom with 15 chandeliers burning 4 unnecessary hours a day (@ 5 cents per KWH) wastes about \$2,000 per year.
- **Serve** ice water to guests cheerfully, but only on request. Place a tent card on tables to explain this fact and explain that a glass of unwanted ice water wastes:
 - ♦ 8 oz. of treated water in the glass,
 - ♦ the water in the ice,
 - ♦ the energy used to make the ice,
 - ♦ 16 oz. of hot water @ 180 deg. F. to wash the glass,
 - ♦ glass storage and breakage,
 - ♦ labour costs for busboys and dishwashers!
 Food service operations which have implemented this policy find the demand for drinking water reduced by about 50% per year, which adds up to substantial savings on energy consumption and costs, over the year.
- **A** 5' x 10' lobby window with deteriorating caulking between the window frames and the walls can leak more than 43 cu. ft. of outside air per minute, for a loss of about \$134 per window, per year.
 - **A** large function room can be heated or cooled in an hour and a half; so don't turn on equipment till it's needed.
- **Set** up a Weather Board to guide employees in setting cooling and heating equipment in offices and public areas.
 - ♦ Black: (range 13 to 27 deg. C) (55 to 80 deg. F): Equipment not turned on.
 - ♦ Blue: (range 27 deg. C (80 deg. F) and up: Set AC to 'low cool'.
 - ♦ Red: (range 13 deg. C (55 deg. F) and below: Turn units to 'low heat'.

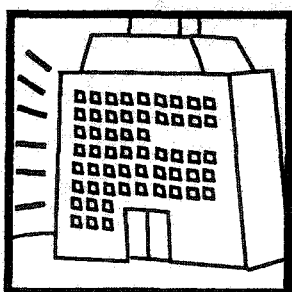
ROOMS DIVISION HANDS-ON GREEN MANAGEMENT



Front Office & Public Areas Checklist: (cont'd)

- **Do** cleaning during daylight hours if possible, so cleaning staff can take advantage of natural lighting.
- **Wash** walls and ceilings on a regular schedule.
- **Dust** light bulbs and fixtures frequently; dusty fixtures waste 1/3rd of all energy they use, and give 33% less light.
- **Redecorate** in light colours, to reflect the light.
- **Install** solar film on lobby and/or dining room windows to reduce heat transference through large windows.
- **Install** outdoor awnings to screen direct sunlight.
- **Keep** curtains and shades closed in all unoccupied rooms.
- **Leave** storm windows on year 'round.
- **Colour** code individual switches in multiple switch installations to identify which switches control what lights; and which lights to turn on to suit different needs.
- **Install** separate switches in large dining and other rooms so unused sections can be turned off or dimmed, when practical.
- **Use** translucent lampshades which permit light to pass through (if this doesn't conflict with your atmosphere and decor objectives). You'll find you can light areas with fewer or smaller sized lamps.
- **In** high-ceilinged rooms, replace ceiling-height fixtures with hanging lamps to bring light closer to the areas needing illumination.
- **Install** solid-state dimmer switches whenever possible; dimmers save energy, make bulbs last longer; and give better lighting/mood control.
- **Lower** the lights in your lobby, lounge areas and hallways during daylight and late night hours.
- **Install** larger, more efficient lighting where practical. One 100w lamp produces more light than two 60w lamps, and saves 20% in energy costs.
- **Develop** a front desk room plan showing the order in which rooms should be assigned. This helps to group guests and functions in rooms serviced by the same equipment.
 - **Fill** lower rooms first, if possible (because heat rises).
 - **If** occupancy is down, close entire floors or wings; turn off lights; set thermostats on Low.
- **Arrange** working areas so that office staff working in slack times such as the overnight period are grouped in the same general area. This saves on lighting and heating (or cooling) large spaces for just a few people.
- **Shut** down some elevators and escalators during slow times.
- **Install** time clocks to cycle saunas off and on.
- **Turn** off ornamental fountains at night.
- **Reduce** hot water temperature in public washrooms; and install flow restrictors and self-closing faucets.
- **Reduce** peak electricity demand by staggering start-up times of individual heating,

ROOMS DIVISION HANDS-ON GREEN MANAGEMENT



- (cont'd)
ventilating and cooling units.
- **Hold** regular staff training and

refresher workshops on energy conservation; you'll help reduce energy dramatically.

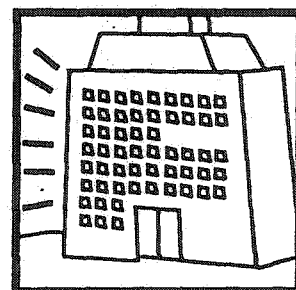
Front Office & Public Areas Operating Procedures Checklist:

- **Turn** off lights when not in use and during daylight hours wherever possible.
- **Keep** all windows and outside doors closed when heating or air conditioning equipment is on.
- **During** air conditioning season, try to use heat-producing office equipment (such as photocopiers) early in the day.
- **Close** the dampers on any unused fireplaces to prevent room heat loss.
- **If** adequate natural light is available, open draperies and raise shades during set-up and tear-down of function rooms; and close drapes and shades when room is vacated or tear-down is completed.
- **Set-up** and turn on sound system as close to start of each function as practicle; allow ample time to check system out; and shut off and store equipment immediately after function ends.
- **Avoid** unnecessary energy consumption in function-room food service facilities. Ensure that refrigeration units are not left running with little or no food in them. Consolidate minor leftovers; and turn off any units which are not needed.
- **Close** dining area drapes when the sun is on windows during the cooling season; open them during the heating season.
 - **Turn** off coffee warmers which are not being used.
 - **Follow** Weather Board instructions for operating air conditioning and heating equipment.
- **Report** any electrical or plumbing deficiencies (such as a leaking tap) as soon as they are observed.
- **Remove** obstructions that restrict free flow of air through heating and cooling units (books or magazines stacked on top of units waste energy by making fan coil or self-contained units work harder than necessary).
- **If** anything is not being used, turn it off.

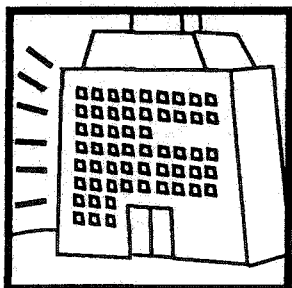
Office & Public Areas Maintenance Checklist:

- **Check** and repair door closing mechanisms to ensure doors are closing snugly.
- **Clean** and replace heating/cooling units filters every 3 months.
- **Clean** heating, cooling and condenser coils regularly.
- **Repair** dripping faucets, and toilets which run continuously.

ROOMS DIVISION HANDS-ON GREEN MANAGEMENT



ROOMS DIVISION HANDS-ON GREEN MANAGEMENT



(cont'd)

(To test toilet tanks for leaks: have housekeeping staff put a few drops of vegetable colouring into the tanks. If the colour appears in the toilet bowls without flushing, check balls and gaskets for leaks.)

- **Check** and repair caulking and sealing on all permanently

closed doors and windows; check weatherstripping on all other doors and windows.

- **Check** all wall sockets, particularly those used for heavy loads, and replace as required.
- **Install** or remove exterior covers on window-mounted air conditioners on an established schedule.

Task Lighting Checklist:



- **Install** task lighting wherever practical to save energy costs. For example:
 - ◆ guest rooms require from 40 to 70 foot candles in the reading/desk area, but only 10 to 20 in the general area;
 - ◆ specific desk lighting will satisfy guests' needs while keeping the rest of the room at

a pleasantly lower light level.

◆ the same holds true throughout your establishment.

- **Analyze** outside lighting, and control it with time clocks or photo-cell units. (If you're using clocks, adjust them frequently to coincide with seasonal changes in natural light).

Lighting Management Checklist:

- **Provide** all employees with daily/weekly checklists covering their specific work areas.
- **Ask** the workers in each area to help decide on proper light levels. The light requirements of individuals vary depending on age and physical condition; productivity suffers if light is inadequate.
- **Place** switches where they're convenient and visible; employees are more apt to cooperate in energy conservation if it's easy.
- **Install** multiple switches in areas that don't always require full lighting, so that only those lights which are needed are on.
- **Install** twist-on or door jamb switches for lights in closets,

storerooms, closets, walk-in coolers, etc..

- **Use** stickers on light switches to remind staff and guests to 'switch-off' when leaving a room.
- **Replace** resistance dimmer switches with solid state dimmers to control lighting in dining rooms, function rooms and guest rooms.
- **Standardize** lamps throughout your establishment as much as possible to eliminate oversize re-lamping and reduce inventory.
- **Rearrange** work stations if possible to make use of shared lighting.
- **Consider** installing 'task lighting' for employee work stations.

Water Management Checklist:

Properties with a laundry, pool, restaurant(s), landscaping and a large public area space use on average from 120 to 200 gallons of water per guest per day.

- **Have** water-use consultants prepare a report on effective ways to save water, and costs and benefits involved.
- **Consider** installing water-saving toilet dams.
- **Retrofit** pressure flush valves on toilets and urinals, where practical. Simple to install, they require almost no maintenance and reduce water consumption by up to 50%.
- **When** remodeling or constructing new bathrooms, specify water-saving toilets.
- **Flow** restrictors on hot water taps in busy public washrooms can reduce faucet flow from 6 gallons a minute to 2 gallons a minute. (Some spray-type faucets use about 90% less water than normal faucets.)
- **Consider** photoelectric-cell-activated faucets which start when hands are placed beneath them and shut off when hands are removed. Initially expensive, they can pay back their cost in 2 years.
- **Water-saving** showerheads will reduce the flow to about 2 - 3 gallons per minute with no discernible difference in quality.
- **Drain** and flush hot water tanks at least every six months to prevent scale build-up and deposits which reduce heating efficiency.
 - **Service** hot water gas or oil burners regularly.
 - **Check** all thermostats frequently.
 - **Check** out solar water heating practicality and costs. Generally, solar heating installations pay themselves down in about five years, after which they supply 'free' hot water with minimum maintenance.
- **Self-contained** point-of-use instant electric water heater – mount directly above or below the basin and eliminate heat loss from storage or hot water supply lines. Ideal in public washrooms and remote locations where hot water need is light.

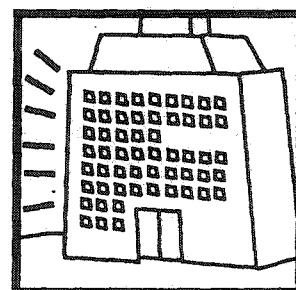


Transportation Operations Checklist:

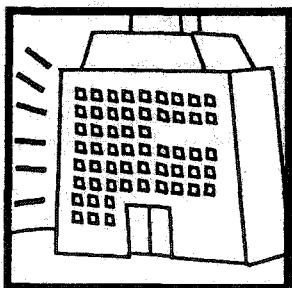
- **To** conserve water, wash vehicles with a bucket of warm, soapy water and a good sponge – not with a constantly-running hose dumping hundreds of gallons of costly filtered water.
- **Before** purchasing new vehicles, check the Transport Canada Fuel Consumption Guide, available by law at all auto, van and truck dealers. Or write to:
Transport Canada,
Public Affairs Branch,
Ottawa, KIA 0N5.



ROOMS DIVISION HANDS-ON GREEN MANAGEMENT



ROOMS DIVISION HANDS-ON GREEN MANAGEMENT

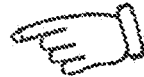


Management Operations Checklist:

- **Impress** on drivers the importance of saving fuel: driving at 90kph uses about 20% less fuel than at 110 kph; jackrabbit starts, abrupt stops or any engine idling all waste fuel.
- **Encourage** company car pools (particularly if employees take company cars home at night). Reserve the most convenient parking spaces for pool cars.
- **Provide** secure, sheltered and convenient bicycle parking spaces for employees; and offer incentives to bikers.
- **Schedule** car/truck travel for non-rush hour periods as much as possible; encourage drivers to seek out routes with a minimum number of stop signs and traffic lights.
- **Investigate** the possibility of converting some vehicles to propane.
- **Air** conditioners reduce a car's fuel efficiency, even when not in use.
- **A** diesel engine requires less maintenance, gets better mileage, and lasts longer than a gasoline engine.
 - **A** V-8 engine uses about 20% more fuel than a 4-cylinder engine.
- **For** highway driving, standard transmission vehicles get about 11% better mileage than automatics.
- **Radial** tires will improve gas mileage by about 5% over bias ply tires.



Transportation Operating Procedures Checklist:



- **Don't** speed; it wastes fuel.
- **Anticipate** stops: gear down, or ease up on the accelerator; maintain steady speed.
- **Slow** down on hills; don't accelerate down the other side.
- **Never** rest your foot on the brake.
- **Don't** allow the engine to idle. Most cars, even in cold weather, only need 30 seconds to warm up before you can begin driving slowly.
- **Remove** unnecessary heavy items from the trunk (such as snow tires in summer); 100 lb. of unnecessary weight can reduce gas mileage by 5%.
- **Fill** gas tank slightly less than full to avoid fuel overflow, fuel waste and air pollution.
- **Report** and repair any malfunctions immediately.
- **Instead** of driving, fax or phone wherever possible.

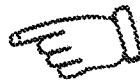
Transportation Maintenance Procedures Checklist:

- **Keep** tires inflated to correct pressure – soft tires can reduce mileage by 5% - 10%.
- **Clean** and/or replace carburetor, air cleaner and oil filter as necessary.
- **Ensure** that the choke is operating properly; a slow-acting or sticking choke wastes fuel.

(cont'd)

- **Clean**, check and gap spark plugs.
- **Check** ignition timing.
- **Clean** distributor cap, adjust or replace condensers and points.
- **Check** and adjust wheel alignment.
- **Each** spring and fall do a thorough inspection and complete tune-up.

Power Utility Rebates & Discounts Checklist:

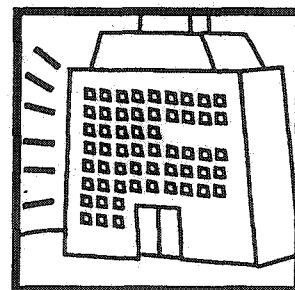


- **The** energy saving programs and rebates offered by provincial utility companies vary widely.
- **The** best power utility energy conservation projects offer free energy audits, discounted hydro rates to hotels which follow energy conservation practices, even subsidies.
- **Cash** grants are sometimes available to help save energy by installing fluorescent lights, more efficient heating systems, insulation, water saving shower heads, etc.

If there are no programs in your area, encourage other businesses to help support the demand for such programs. Hydro utilities save money through energy-conservation rebates; and often only need reminding of what's being done in other jurisdictions, and with what positive effects, to initiate programs of their own.

Numbers to call for information in your area are in the Green Contacts List.

ROOMS DIVISION HANDS-ON GREEN MANAGEMENT





VI. STORES & PURCHASING

The responsibilities and initiatives of Stores/Purchasing are fundamental to the entire CPH&R GREEN PLAN. Every other department will and must rely on your commitment and your success to help them achieve our green targets.

Remember – your Department has enormous potential leverage with all of CPH&R's suppliers (we've all witnessed how much clout a single class of Grade Five students can have with a giant corporation like MacDonalds!)

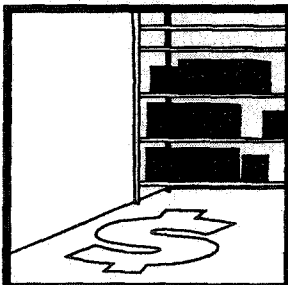
Stores/Purchasing General Checklist:

A random sampling of your various goals includes the following:

- **Buy** in bulk wherever possible.
- **Insist** on minimal packaging from all suppliers.
- **Press** all suppliers to use returnable and re-usable packaging, particularly cardboard cartons and wooden crates.
- **Stop** buying any disposable items.
- **Buy** unbleached and recycled paper products.
- **If** you must buy batteries, buy only the rechargeable kind.
- **Seek** out solar-powered products, from calculators to outdoor lights for guest paths in the grounds. (There's even a solar-powered refrigerator available; see the Green Contacts List.)
- **Buy** only solid state dimmers for all lighting installations.
- **Don't** buy any toxic chemicals, especially for use in groundskeeping.
- **Don't** buy phosphate detergents or cleansers.
- **Demand** evidence of environmental claims from every supplier. (Claiming that a product or package is recyclable is meaningless if there's no local program to recycle them.)
- **Purchase** and offer cotton diapers to your guests for their use while in the hotel; or use a local diaper service.
- **Stop** buying chemical deodorizers or (blue) toilet tank cleansers (that blue stuff is mostly vegetable colouring.)
- **Subscribe** to some of the best environment magazines, such as "Garbage", "Harrowsmith", "Buzzworm" etc. Their ads are a goldmine of information on the newest and best environment-friendly products and processes.



STORES & PURCHASING GREEN PURCHASING POWER



You'll need to work closely with Plant Management to discuss their green purchasing needs in areas ranging from plumbing, heating and lighting to appliances and heavy equipment, including vehicles. Your colleagues in every Department will have suggestions regarding green products for their needs. Meet with them individually, and in your environment committee.



VII. HOUSEKEEPING



Housekeeping, with its intimate daily contact with all our guests, is at the leading edge of all CPH&R Green Partnership initiatives and activities. As a result, Housekeeping has a special and critical function – that of letting our guests know what we are doing, and why we are doing it.

The aim of any green program must be effective control without guest discomfort or inconvenience. You certainly won't expect your guests to take cold showers or try to read by the light of a 25w bulb.

Remember: guests can't become part of your program till they know how they can help. You'll find the majority of them will appreciate being told how to help conserve energy.

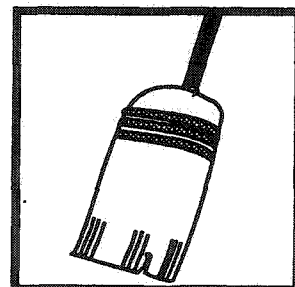
Housekeeping General Activities Checklist:

Help save at least 20% on total room energy costs just by implementing no-cost or low-cost conservation measures. Since 1975, energy costs per room have increased by about 10% per annum; total revenues generated have increased only about 7% per annum. The energy we save makes a big difference.

- **Eliminate** the use of all aerosols.
- **Collect** all used soaps, shampoos etc. for the GEMS program.
- **Turn** off all lights, radios and TVs when you leave each guest room.
- **Draw** drapes or blinds when the room is empty (but open them when the daylight is adequate to light the room for cleaning). Turn down thermostats when rooms are empty.
- **Check** all plumbing fixtures and report any leaks, dripping faucets, or sink and bathtub stoppers which don't work or don't fit properly.
- **Check** room wastebaskets for recyclable materials; put bottles, jars, tins and newspapers into recycling bins.
- **Install** a recycling bag on housekeeping carts to hold the contents of guest room blue boxes and recyclable materials.
- **Check** electrical sockets and appliances; report any faults.
- **Use** cleaning cloths rather than paper towels.
- **Use** only non-toxic cleansers. (Check the Green Contacts List for environmentally-friendly commercial cleaning products.)



HOUSEKEEPING A 20% ENERGY SAVINGS



Housekeeping Management Checklist:

- **Install** timer switches for lights in low-use areas such as maids' closets; and for bathroom exhaust fans and heat lamps.
- **Establish** and police a regular schedule for cleaning lighting fixtures. Fewer and/or smaller lamps will often do just as good a job if they're kept clean.
- **Establish** a regular schedule for cleaning walls and ceilings.
- **Reduce** domestic water temperature to 120 deg. F at water heater.
- **Use** tent cards and decals in guest rooms to offer specific suggestions for guests. For example:
 - ▶ Turn everything off when the room is unoccupied;
 - ▶ Don't open windows;
 - ▶ If you're not using it, turn it off.



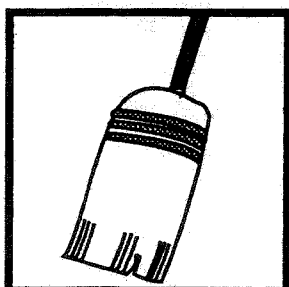
Housekeeping Operating Procedures Checklist:



- **Turn** off television sets and radios when rooms are being made up and when guests are not in rooms.
- **Reduce** thermostat to prescribed minimums (55 deg. F in unoccupied rooms, 68 deg. F in occupied rooms) as soon as you enter the room.
- **If** room is being heated or cooled, close any open doors or windows unless special ventilation is required.
- **Unless** moisture is a problem, do not operate fans, heat lamps, or other electric heaters during cleaning.
- **Use** only appliances that are in good working order.
- **Report** any electrical or plumbing deficiencies (such as a leaking tap).
- **Set** refrigerators in vacant rooms on low if a new guest is expected; otherwise, disconnect and leave door ajar.
- **Ensure** that rugs, draperies, or furniture do not obstruct heating or cooling vents.
- **After** making up guest rooms, close draperies and shades to prevent loss of heated or cooled air.
- **Before** leaving guest room, ensure that faucets and toilets are not running.
- **Turn** off all lights when leaving unoccupied guest rooms, maids' closets, linen rooms and storage rooms.



HOUSEKEEPING A 20% ENERGY SAVINGS



You'll need a lot of help. Talk with your environment committee, and with your green partners in Purchasing, Repairs and Renovations and Plant Management. Ask your environment committee to provide you with information on CPH&R's green goals to pass on to your guests.



VIII. REPAIRS & RENOVATIONS

The daily activities of Repairs & Renovations will play a pivotal role in implementation of CPH&R Green Partnership targets in every department of the hotel. Seek the help and advice of your environment committee and your green partners, particularly those in Housekeeping, Purchasing and Plant Management.

Your most crucial responsibility will be to advise the Plant Management Department, directly, and through the environment committee, of areas where energy savings are possible with improved equipment, installations and maintenance procedures.

Tasks of Special Importance:

In the course of your day-to-day work, your department will have to deal with hundreds of tasks, from the mundane to the monumental. A selection of such tasks follows:

- **Locate** and repair any and all plumbing leaks or faults.
- **Locate** and repair any electrical faults.
- **Retrofit** water-saving toilet dams, faucet aerators and shower heads.
- **Check** thermostat settings and insulation of all water heaters.
- **Check** insulation of all hot water pipes.
- **Check** for and repair any steam leaks.
- **Isolate** and shut-down steam lines in unused areas or buildings.
- **Inspect** and upgrade all caulking and weatherstripping.
- **Make** periodic checks to locate and replace any wet insulation.
- **Clean** all air conditioning equipment and filters regularly, and ensure that no outdoor obstructions (such as shrubs) reduce their efficiency.
- **Ensure** that heating sources aren't blocked by furniture.
- **Install** timers and solid state dimmers wherever practical.
- **Retrofit** fluorescents in place of high-energy incandescents.



Heat Loss Checklists

Heat loss = wasted energy;

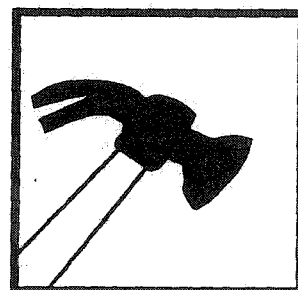
Wasted energy = needless energy generated and money wasted;

Needless energy generated = pollution
(greenhouse gas & acid rain).

Many of the ways you can reduce heat loss from your buildings cost you little or almost nothing; other items will require some investment, budgeting, and discussion with Plant Management.



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In every case, you'll save far more over the lifetime of these projects than you've invested.

A- Weatherstripping & Caulking:



Apply weatherstripping where two surfaces meet and move relative to each other; e.g. doors. Apply caulking where two surfaces meet but don't move; eg:

- **Around** every window
- **In** gaps underneath baseboards
- **Around** wall receptacles
- **Wherever** plumbing and wiring enter the building
- **Any** cracks on the inside surface of walls and ceiling
- **Gaps** around chimney dampers; openings where pipes, exhaust fans or ducts are cut through the attic floor.

Openings too large to be plugged with caulking should be stuffed with insulation. Roof openings or stacks no longer in use should be thoroughly sealed and insulated.

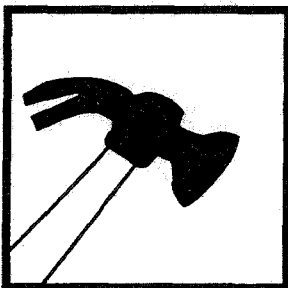
Studies indicate that the proper use of insulation can generate savings in heating costs of as much as 90% for roofs, 60% for walls, and 70% for floors.

B - Windows:

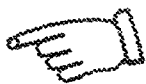


- **If** existing windows are single glass but are in good condition, the installation of separate storm windows can reduce heat loss by 50%.
- **If** existing windows are snug-fitting and well-caulked, each square foot of window still loses as much as 7 times the amount of heat lost per square foot of floor; 5 times as much as per square foot of wall; and 4 times as much as per square foot of ceiling.
- **If** your existing windows are in poor condition, complete replacement with thermalized windows may make economic sense. In each case, the life-cycle benefits must be balanced against the initial cost.
- **Most** establishments with separate storm windows now leave them in place year 'round, to reduce heat loss in winter and heat gain during the hot airconditioning weather.
- **When** analyzing your windows, don't overlook the frames. Aluminum conducts heat and cold through the walls of your building entirely too efficiently (touch the bare handle of an aluminum pot on the stove!); so it's essential to insulate aluminum window frames.
- **Every** foot of insulation pays for itself many times over in reduced heat loss.
- **Most** new aluminum windows have built-in insulators or 'thermal breaks'.

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C - Doors:



- **Doors** are large heat wasters.
- **Consider** building a vestibule or entry-way around or inside all main entrances and exits, if feasible.
- **Set** outer and inner doors far enough apart that each one closes before the other is opened.
- **An** alternative to vestibules is to install revolving doors.
- **All** doors should be fitted with automatic closers.

Heat Loss Management Checklist:

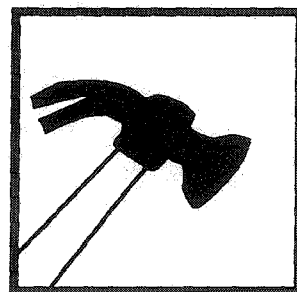
- **Have** Maintenance set up a system to check caulking and weatherstripping annually.
- **Check** existing insulation and install additional materials as necessary, especially in ceilings and floors over open outside areas.
- **Ensure** adequate ventilation in attic.
- **If** windows are single-glazed, install storm windows, or replace old windows, depending on condition.
- **Have** a qualified roofing contractor inspect your roof and assess the quality of existing materials, for repair or replacement, as necessary.
- **Install** automatic closers on all exterior doors.
- **Install** vestibules or revolving doors at all major entrances and exits.
- **Consider** installing solar or reflective film on existing large windows.
- **If** you have sufficient land around your building(s), consider hiring a landscape architect. Deciduous trees planted by west windows offer cooling shade in summer; earth berms help buffer the prevailing wind; both relatively cost relatively little compared to the energy they can save.
- **Install** awnings on west windows to control hot summer sun.
- **Ask** all hotel green partners to report cracks and drafts in windows, walls etc.



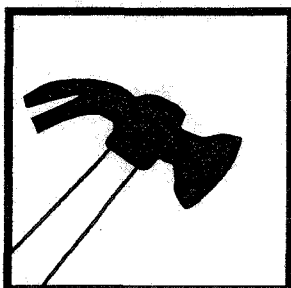
Heat Loss Maintenance Checklist:

- **Check** all windows for breaks or cracks; replace immediately.
- **Check** the roof for any openings (eg. skylights) no longer used and caulk, insulate and seal.
- **Check** the caulking annually, before winter, in:
 - ♦ windows;
 - ♦ gaps underneath baseboards;
 - ♦ around wall receptacles;
 - ♦ openings where plumbing and wiring enter building;
 - ♦ any cracks on inside surface of walls and ceilings;
 - ♦ inside corners and gaps

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- (cont'd)
- where walls and ceilings meet;
 - ◆ gaps around chimney dampers.
 - **Weatherstrip** the following annually, before winter:
 - ◆ all doors, especially the threshold;
 - ◆ all operable windows.
 - **Insulate** all areas too large to

be filled with caulking.

- **Locate** and replace any wet insulation; be sure to fix the leak or problem causing the moisture before repairing it.
- **Ensure** that doors and windows all close completely; repair any that are difficult to close.

Heating, Ventilating & Air Conditioning (HVAC):

- **Obtain** operating manuals for every piece of equipment and use them to get the equipment or system into peak form. (Improperly tuned equipment uses an average of 20% more power to produce the same output as well tuned equipment.)
- **Cleaning** equipment can produce amazing energy consumption reductions. Examples of low-cost remedies:
 - ◆ Dirty connections on guest room fan-coil units consume about 2w each daily; with 6 connections per unit, dirty connections can cost a 100-room property about \$525 annually.
 - ◆ A 1-ton cooling unit with a plugged filter and dirty coils must operate for an hour and twenty-five minutes (rather than an hour), to produce 1 ton of cooling. The energy used by 100 such units, operating 5 hours per day for a 100-day cooling season, can add up to about \$3,025 per season in wasted energy.
- **Condenser** coils for air conditioning and refrigeration equipment are often located on the roof. Direct sunlight and solar heat decrease their

effectiveness; a simple sun shield will greatly reduce this problem.

- **Ceiling** fans pull warm air down from the ceiling to provide a comfortable floor-to-ceiling temperature during the heating season, and constant air circulation during the summer. Relatively inexpensive to buy and operate, they can enhance the decor.
- **Many** ventilation fans operate unnecessarily 24 hours a day.

Practical low-cost

alternatives include:

- ◆ Heat-sensing thermostats to turn fans in storage and equipment rooms on and off;
- ◆ Carbon monoxide sensors to control exhaust fans in parking garages;
- ◆ Controlling guest bathroom fans by the light switch.
- **Examine** the distribution system of any steam boiler(s) on your property for undersized pipe runs, insufficient pipe insulation or steam leaks. Remove any steam lines that are no longer used; and install valves to isolate areas that use intermittent or seasonal steam so steam will be delivered only when needed.
- **Don't** underestimate and

(cont'd)

ignore steam leaks as an energy conservation measure.

An example:

◆ A 1/8" hole in a 15 psig line will lose over 13,500 lb. of steam per month, and waste about \$1,080 per year;

◆ The same size hole in a 100 psig line will lose 52,000 lb. per month, and waste about

\$4,200 per year.

(Now imagine what steam leaks are costing your operation.)

- **All** HVAC system pipes should be insulated; heating ducts passing through unheated areas should be sealed and insulated.
- **Damaged** or wet insulation should be replaced promptly.

HVAC Management Checklist:

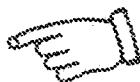


- **Train** your staff to report overheated or over-cooled rooms rather than opening windows.
- **Instruct** staff to avoid placing furniture or any other obstruction in front of heating or cooling vents.
- **Initiate** and maintain a preventive maintenance program for your HVAC system (and all other energy-using equipment on premises).
- **In** late winter have your maintenance department do a thorough inspection of all heating equipment, valves and controls, while the system is still operating under heavy conditions. Deficiencies in

performance will be easy to discover; and repairs can be made during summer down-time.

- **Have** separate controls installed for heating or cooling in vestibules or entrances; (they don't have to be at the same comfort level as interior rooms).
- **Install** heat deflectors over vents to help air circulation.
- **Consider** installing supplementary heating in rooms where heating requirements may cause other rooms to be overheated.
- **Never** locate compressors near heating units.

HVAC - Operating Procedures Checklist:



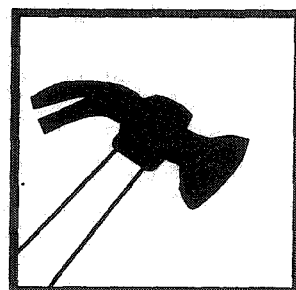
A - Central Heating/Air Conditioning Systems:

- **Raise** the temperature of water leaving the chiller as the air conditioning load is reduced.
- **Produce** chilled water at the highest temperature possible for the equipment using the

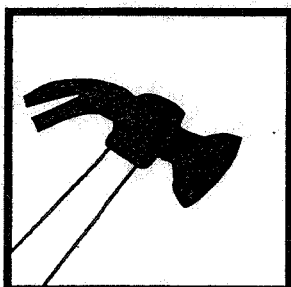
chilled water.

- **Shut** down the condenser water pump and chilled water pump when a chiller is out of service.
- **Shut** off pre-heat coil in multi-zone units during cooling season.
- **Use** outdoor air for cooling,

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(cont'd)
whenever possible.

- **Reduce** intake of outdoor air to

minimum allowed by codes
when it must be heated or
cooled.

B - Central Boiler Plants:

- **During** heating season, if one boiler will carry the load, shut down other boilers: 1 boiler operating at 80% capacity is 7% more efficient than two at 40% capacity.
- **Set** pressure on steam boilers as low as possible to achieve required output; reduce steam pressure when high pressure is not needed after a certain hour, such as when the laundry shuts down. (Also consider installing timer switches.)

- **Excessive** boiler blowdown drains hot water needlessly; establish a blowdown schedule and follow it.
- **Return** steam condensate to the feed water tank for reuse.
- **Install** a thermometer in the flue outlet; and maintain stack temperature according to manufacturer's directions.
- **Check** chimney frequently for visible smoke, which indicates inefficient combustion.
- **Check** fuel oil pumps regularly to maintain correct oil pressure and flow to burners.

HVAC - Maintenance Checklist:



A - Heating/Air Conditioning & Central Systems:

- **Clean** or change all filters monthly, or according to manufacturer's directions.
- **Clean** and straighten condensing coil fins on both interior and exterior sides.
- **Check** fan blades for alignment and cleanliness, and oil all fans. Remove squirrel cage fans for proper cleaning.
- **Check** all drains in self-contained units. If the drain for the condensate from the coil becomes clogged, proper drainage cannot take place.
- **Check** refrigerant system for gas charge.
- **Seal** any casing leaks.

- **Check** belts for wear and tension, replace when necessary.
- **Clean** all tubes and connections of fan-coil units.
- **Lubricate** motors and compressors following manufacturer's recommendations.
 - **Lubricate** motor bearings; check for excessive noise or vibration; and replace worn bearings.
 - **Check** controls and adjust as necessary to prevent short cycling or continuous compressor operation.
- **Check** all dampers and linkage for proper operation, ensuring there is no leakage when in closed position.
- **Keep** all screens on inlet ducts



(cont'd)

clean and free of debris.

- **Keep** outdoor portions of cooling systems clear of plants, vines and other obstructions to air flow. Eliminate any condition that would cause warm air to circulate back into the air conditioner.
- **Clean** and check all ductwork systems for air leakage and damaged insulation, and repair as required.
- **Check** canvas for flexible duct connections at fan/blower air handling units; replace promptly, as required.
- **Check** and replace insulation

as necessary on all pipes and vents where thermal control is important.

- **On** fresh air intake, replace screens that have grids smaller than 1/2" square; they obstruct the fresh air flow.
- **Check** size and speed of exhaust fans and limit them to actual need.
- **Check** and calibrate thermostats semi-annually.
- **Relocate** any room thermostats that are positioned where they can be affected by the sun, cold windows or walls, or any factors other than ambient room temperature.

B - Central Boiler Plants:

- **Inspect** and clean strainers on hot water, steam and condensate lines.
- **Inspect** boilers regularly; remove deposits of soot, scale or slag by scraping, brushing or vacuuming.
- **Inspect** combustion chamber refractory for deterioration, cracks and leaks; and repair immediately.
- **Check** steam traps for leakage; repair or replace as needed.

- **Check** packing glands, valves and joints for leaks; repair as necessary.
- **Check** condensate tank vents for a visible plume of steam; it indicates blowing steam traps that should be repaired.
- **Check** operation of pressure-reducing and regulating valves; adjust, repair or replace as needed.
- **Check** gas burners and set for correct gas flow; remove any mineral or corrosion build-up on burners and burner parts.

Lighting Levels Chart:

The following chart shows suggested light levels for various areas in hotel and food service establishments; and can help you decide what areas may have too little or too much light.

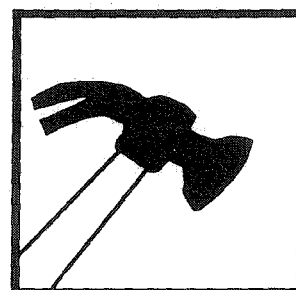
<u>AREA</u>	<u>FOOT CANDLES</u>
Entrance foyer	30
Corridors, elevators, stairs	20
Front Office	50
Lobby	- general 10-20
	- reading 40-70
Offices	70-100



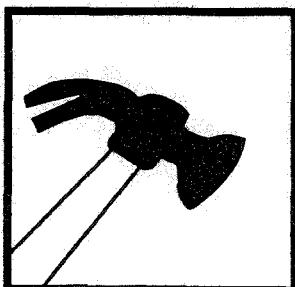
"Calibrate, calibrate, calibrate."

- says one pro to another

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AREA (cont'd)

Dining areas	- cashier	50
	- intimate atmosphere	3-10
	- quick service type	50
Kitchen	- preparation area	70
	- clean-up area	30-50
Guest rooms	- general	10-20
	- bathroom mirror	50
	- reading/desk areas	40-70
Laundries	- general	30
	- sorting, ironing	50-70
Exterior	- entrance	5
	- surroundings	1
	- parking lots	1-2

FOOT CANDLES (cont'd)

Lighting Checklist:

- **Check** local codes regarding lighting safety regulations for work areas, passageways and stairwells.
- **Before** changing lighting, remember dirty fixtures or walls, can reduce lighting efficiency 1/3rd or more. Check cleanliness of fixtures, bulbs, ceilings, walls, windows. To prove a point, measure the footcandles of a fixture with a light meter before and after cleaning.
- **Lamps** lose efficiency with age, but still consume the same amount of energy. 'Group re-lamp' when lamps reach approximately 70% cent of their rated life expectancy, at which point the value of the lamps is less than the money you can save by installing new lamps. An example:
 ♦ **A** worker replacing a single, burned-out lamp takes about 30 minutes to get a ladder and new lamp, go to the location, possibly move furniture, open



the luminaire, replace the lamp, and eventually return the ladder. At \$8 an hour labour costs plus 30% in overhead, your cost to change 1 lamp is about \$5.20. Replacing 200 lamps one at a time will cost \$1,040.

♦ **Replacing** lamps in groups takes an average of only 3 minutes per lamp. You can replace 200 lamps for \$104.

♦ **Potential** savings in labour to group replace: \$936.

- **When** purchasing new fixtures, specify ventilated fixtures. Fixtures with closed tops collect interior dirt quickly, and their efficiency can drop as much as 38% in 12 months, compared to only 6% in ventilated fixtures.
- **Invest** in solid state dimmer switches both to vary the amount of light (and energy) you use, and also to prolong the life of your lamps. (Replace any resistor-type dimmer switches; they don't decrease the amount of wattage used, but just stop the power before it

(cont'd)
reaches the lamp)

- **Replace** incandescent fixtures where practical with smaller

wattage fluorescents, and reduce electrical bills substantially. An example follows.

ELECTRICAL SAVINGS EXAMPLE

A resort operator replaced 2-lamp 60w incandescent fixtures in 100 hallway/stairwell locations with 15w fluorescent fixtures, for a reduction of 105w per fixture; Both sets of lamps burned 24 hours a day, every day, for a total of 8,760 hours per year per lamp;

8,760 hours per year per lamp x 105 watts per hour x 100 fixtures = 91,980,000 watts per year;

91,980,000 = 91,980 Kwh/year x 5 cents/kwh = \$4,599/year
or a saving of **\$45.99 per fixture per year.**

N.B. the cost of electricity is expected to increase at the rate of 20 per cent per year for the foreseeable future.

Guest Room Energy Management Checklist:

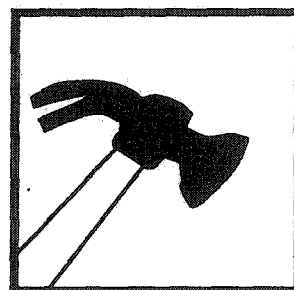
- **Stop** leaking taps: 1 drip per second from a leaking hot water faucet sends 175 gallons of hot water down the drain every month. Multiplied by every tap in a 100-room hotel, drips can add up to 583 gallons of hot water wasted daily.
- **The** instant-on feature on television sets consumes energy continuously, (about 6 watts per hour). With 100 rooms, this can add up to about \$220 per year; an expense you can avoid simply by disconnecting the instant-on feature.
- **If** every guest room in a 100-room hotel leaves a window open 'just a crack', it costs about \$16.50 per hour in wasted energy.
- **A** good water-saving shower head will reduce the standard flow of 6-12 gallons per minute to 2 gallons per minute without interfering with guest comfort. 100 water-saving shower heads will save over 2500 gallons of hot water per day, based on one 10-minute shower each!



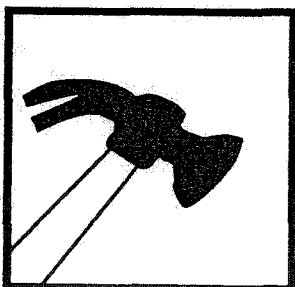
Guest Rooms Maintenance Procedures Checklist:

- **Disconnect** 'instant-on' feature from TV sets.
- **Verify** accuracy of room thermostat.
- **Clean** or replace all filters on a scheduled basis.
- **Clean** all fan blades, lubricate all fan bearings and motor

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(cont'd)

bearings as required.

- **Install** or remove exterior covers on window-mounted air conditioners on an established schedule.
- **Verify** on a regular basis that all sockets, wiring and plugs on radios and TVs are in good order.
- **Verify** the condition of wall sockets – particularly those used for heavy loads such as vacuum cleaners.
- **Verify** and correct, if necessary, caulking and sealing on all permanently closed doors and windows. Check weather stripping on operable units.
- **Affix** required energy conservation stickers, messages or instructions.
- **Make** sure any air conditioning or refrigerator evaporator coils are clean, that defrost mechanisms are working properly, and that all drip pans are clean and drains unclogged.
- **Thermostats** adjusted by guests are frequently abused; check them annually for operation and calibration; verify that contacts are clean and unpitted.

Water Maintenance Checklist:

- **Repair** leaks in water piping system.
- **Repair** or replace leaky faucets, toilets, pump glands and valves.
- **Clean** and recondition hot water temperature mixing valves at least annually.
- **Check** insulation on hot water pipes and storage tanks frequently.
- **Flush** hot water tanks every six months (more frequently if water is very hard), to remove solids and sludge which have settled in bottom of tanks.
- **Remove** exterior scale buildup from electric hot water heater coils at least annually.
- **With** immersion type hot water heaters installed into the boiler shell, remove and clean scale from interior and exterior coil surfaces.
- **Check** temperature controls on water storage tanks every six months.
- **Check** all sink and bathtub stoppers that don't seal properly, and repair or replace as required.
- **Test** hot water controls, and adjust if necessary.
- **Check** the steam trap on steam hot water heaters. If steam is passing through the trap, repair or replace.



IX. FOOD SERVICES



Because everything you do, and everything you produce is under the daily inspection of every guest, you are very much in the front lines of the CPH&R GREEN PROGRAM. Ask for help and advice from your environment committee as well as from your green partners in Purchasing, in Plant Management, in Repairs and Renovations and in Housekeeping and Kitchens.

The environment committee will help you with answers and materials for guests who will want to know what CPH&R is doing, and why we are doing it.

Food Services Management/Maintenance Checklist:



- **Eliminate** the use of any disposable items, from plastic cutlery to paper napkins or place mats.
- **Eliminate** all single-serving condiments – sugar, creamers, butter, jams or jellies, salt, pepper, ketchup, mustard, relish or vinegar.
- **Eliminate** aerosol products; use pump dispensers wherever practical. (Eg: switch from aerosol-propelled "plastic" whipped cream to the real thing; it takes longer, but Mother Nature will be grateful, and so will your guests.)
- **Recycle** tins, bottles, jars and paper products.
- **Order** in bulk wherever possible.
- **Refuse** excess packaging on produce.
 - **Turn** off all equipment and lighting when it's not in use.
 - **Keep** all kitchen surfaces and lighting fixtures clean.
- **Check** equipment, plumbing and electrical outlets regularly for faults; have them repaired or replaced immediately.
- **Install** aerators on all faucets.
- **Offer** "real ale", free of chemical additives, in your restaurants and bars.



For information on organic food products, also check in our Green Contacts List.

For data on food, packaging and beverages:

The Packaging Association of Canada

111 Merton Street, Ste. 201

Toronto, Ontario

M4S 3A7

Phone: 416-485-7812

A coalition of packaging companies (CEO is Alan M. Robinson)

FOOD SERVICES ON THE FRONT LINE

